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MINIMUM

Makes Railway an Electrical

The Installation of a
WESTINGHOUSE
Air Conditioning
System Requires no
Car Revenue Space

● The Westinghouse railway-car air conditioning system—completely electrically operated—requires *no car revenue space*.

The air conditioning unit fits into the car ceiling; the refrigerating unit simply bolts beneath the car floor; the gear-driven generator rides on the car axle and truck end-sill; and the control fits into existing lighting panel cabinets.

Minimum space is only one of the advantages that make railway air conditioning an electrical job. Among others of importance

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RAILWAY AGE

Surplus Pigs and Surplus Transport — a Contrast

Critics of the New Deal have pointed out that the standard of living of the country can be raised, not by curtailing production and increasing prices, but only by increasing production and lowering prices with reference to incomes. To the extent that the government by its recovery policy fosters curtailment of production and higher prices, these critics contend, there will be just that much less to distribute among the people; and the products available will cost more and hence be less widely distributed.

Increased Production, Lower Prices

It is difficult to evade the logic of this contention. There is mathematical certainty to the fact that the fewer pigs there are, the less ham and bacon we shall have. It has likewise been demonstrated that widespread distribution of commodities among persons formerly unable to command them is always accompanied by sharp reductions in the prices of those commodities as compared with money incomes—as, for example, the increase in the distribution of automobiles and radios during the 'Twenties. Crises, therefore, are the outgrowth of maladjustments in the economic scheme and not of general overproduction—which latter is impossible unless we are to assume a stationary living standard.

Such critical observations may, we believe, be fairly made of some phases of the New Deal—as, for instance, the attempt made in some of the NRA codes to establish prices based upon the costs of inefficient producers and provisions which may prevent the installation of new machinery which would lower production costs. Such criticism, however, ought not be made of provisions aimed to end competition which is unquestionably of the "cut throat" variety and of that based on long hours and low wages for labor. The producer who cuts his costs, and prices, by the use of efficient machinery and methods is a public benefactor and the NRA ought not to interfere with him, but the producer who lowers prices by dissipating his own capital

and exploiting labor simply transfers his workers' income to his customers while he creates a serious maladjustment in the economic machine. Putting an end to such practices is a worthy goal in which decent industry may heartily co-operate with the government.

Caution is needed, however, in accepting the truism that an increase in the standard of living is assured by an increase in production. If producers gage the relative wants of society incorrectly, it is possible to overproduce certain commodities—not absolutely, but with relation to other goods and services—so that prices of these certain commodities fall lower than the general price level and their producers' incomes decline correspondingly. This creates a maladjustment the ultimate effect of which may be generally disastrous. The cure is not curtailment of production, but rather the diversion of productive energies to other products. Whether government authorities, however, acting independently or with the aid of industrial leaders, can correct such maladjustments more quickly and less painfully than will the unhampered operation of economic forces is highly questionable.

Government Policies Inconsistent

One's faith in the potency of the government to deal intelligently, or even honestly, with such matters might be strengthened considerably if it showed some slight degree of consistency in its policy. Instead, on the one hand, it kills little pigs and plows under wheat and cotton to curtail their relative over-supply and contemplates paying owners of marginal land to withdraw it from production; on the other hand, it cheerfully appropriates hundreds of millions of the taxpayers' money—and prospective earnings for the future—to duplicate transportation facilities by new plant which is less economical than the existing facilities which it parallels and which are used to less than half their capacity.

If private capitalists should propose to build a railroad from the Middle West to Atlantic tidewater, they would be forbidden to do so. As a matter of fact, in

1932 the Interstate Commerce Commission refused to authorize L. F. Loree and his associates to construct with private capital such a line, which could probably have been operated considerably more economically than existing routes, the basis for refusal being insufficient evidence that the proposed railroad would produce economies sufficient to offset the disadvantages it would bring to existing lines. Now the federal government proposes with taxpayers' money to construct a waterway—the St. Lawrence project—connecting the Middle West and the Atlantic. By contrast to the Loree project, total transportation costs by the seaway will be demonstrably higher than those of existing railways. By a strange contradiction, the government holds it wrong to permit private capital by installation of a more efficient facility to jeopardize existing investment in transportation, while it finds no flaw in similarly undermining this same investment by investing its own funds in a facility unquestionably *less efficient* than those from which it will divert traffic.

Capital Expenditures Which Increase Unit Costs

Transportation is a service and differs from commodities in that it is not produced until it is sold. If it be granted that it is desirable to increase the standard of living, in part, by increasing the production of transportation, then that end may be accomplished only by attracting purchasers by reducing the price of the service. The price may be lowered either by reducing costs or by paying a part of them by taxation. The latter course is the one which the government is following by its extravagant expenditures on highways and waterways. Meantime, by needless duplication of facilities, the actual *cost* of transportation is kept unwarrantably high. The national economy would be far better served if the money spent upon duplicate facilities were diverted to really needed (and remunerative) capital investments, such as modern locomotives or toll bridges, leaving traffic for more intensive (and hence more economical) movement by existing routes. Certainly it ought to be obvious that the unit costs of transportation on the railroads from which the St. Lawrence or the Mississippi divert business will be increased by this diversion, with the probable result that the average unit cost of both rail and waterway transportation will be higher than they would be if the waterways were absent.

How Finance the "New Deal"?

The President's budget message to Congress attracted wide attention because of the billions in outlays it outlined. It should be remembered, however, that not all those billions are expenditures. Two or three billions of them are loans, which, if recovery succeeds, will be repaid without cost to the taxpayers. Among these, of course, are the loans by the R. F. C. and the P. W. A. to the railroads. Such loans contribute fully as much to recovery as those involving direct government outlays. That being so, is it not clear that government loans for housing, for railroad

rehabilitation, for toll bridges and tunnels and other such projects are far more sound and preferable from every standpoint than those which bring no direct return but which must be paid for by the taxpayers? As a corollary to this, should not the government look to special fees from users to recover its investment in those public works which have a definite economic value—such as highways and waterways—rather than to payers of income and excise taxes who will be burdened quite sufficiently if they are required to meet only the bill for direct relief of unemployment in addition to the ordinary expenses of government?

Shorter Hours and Higher Wages

With the NRA considering a further reduction in hours of labor as part of its program and railroad labor seeking shorter hours and wage concessions by legislation, the comments on the labor aspects of the New Deal set forth in a recent book, "The Economics of the Recovery Program", a comprehensive symposium by a group of Harvard economists, are timely and arresting. To quote:

Unless working hours are so long as to impair the efficiency of the worker, a general reduction can only be accompanied by a decline in the real income of the community and particularly in the income of the workers as a whole. No one would suggest that half of the population should permanently remain idle, supported by the other half working on the basis of an eight-hour day; yet the effects on real income of a general four-hour day would not be markedly different. Whether the advantages of increased leisure outweigh the reduction of income is a question for workers themselves to decide.

"Workers are in competition with other workers," another passage reads, "and the relatively more expensive group will be faced with greater unemployment." Many railway employees have already been thrown out of work because railway wages and working conditions are so much better than those of competing forms of transportation. If they wish to safeguard their jobs, therefore, it is obvious that their first step should be to endeavor to reduce the disparity between labor standards in all forms of transportation and, thereafter, to make any concession in hours, wages, pensions or insurance which they seek applicable alike to all forms of transport. Otherwise any improvement they may secure can come only at the cost of further unemployment.

A Better Bill for Highway Regulation

The new Rayburn bill just introduced in Congress, which would subject to governmental regulation the interstate services of common carrier and contract carrier operators of both motor buses and motor trucks, is about the best bill of its kind that has ever been written. It is better than the numerous other bills that have been proposed heretofore to provide regulation for interstate highway transportation because it calls for all of the regulation that is needed, not for only a part

of it. The new Rayburn bill would regulate the operations of both buses and trucks and of both common carriers and contract carriers. It would make a thorough job of such regulation, and in this respect is rather different from its best-remembered predecessors. It would require common carriers to secure certificates of public convenience and necessity, and contract carriers to secure operating permits. It would give the Interstate Commerce Commission complete power to prescribe minimum and maximum rates for common carriers and to fix minimum rates for contract carriers. It would give the commission a measure of supervision over the operations of all kinds of carriers, to the extent necessary for the protection of the safety and interests of the traveling and shipping public. In other words, the Rayburn bill calls for the kind of regulation of interstate highway transportation which has been so badly needed for several years.

What are its chances for passage at this session of Congress? They are considered good. Undoubtedly action upon the bill will be deferred pending the publication of the recommendations of Co-ordinator Eastman on the subject of highway regulation, but these should be forthcoming before the close of the present session. Furthermore, it is confidently believed that these recommendations will not favor legislation markedly different, if different at all, from that provided in the Rayburn bill, because the latter meets the situation in the way that impartial observers have long known that it ought to be met. Assuming that the Eastman recommendations will be in accord with the provisions of the new Rayburn bill and assuming that the weight of the administration will be thrown promptly behind the Eastman recommendations—and these seem to be fair assumptions—the likelihood of passage of the bill at the present session of Congress appears to be strong.

The regulation of interstate highway transportation has been a long time coming to a head, but it is inconceivable that it can be delayed much longer. It will be fortunate indeed if the regulatory bill finally passed is a document as thorough-going in its provisions as the new Rayburn bill.

The Impossibility of Pleasing Everybody

That the railways have frequent cause to be disheartened with the demands of the public and the lack of appreciation which attends their efforts, largely to serve and please the public, is evident all too commonly. There may have been a time when some of the roads gave little thought to the attitude of their patrons and constituents, but few would surmise as much today from the efforts made on every hand to cater to the tastes and tempo of the public mind.

It is well that this is true, because the good will of

the public was never more needed by the railways. This policy should be extended and broadened, but, at the same time, one should not lose sight of the fact that so large a part of the public is apt to be unreasonable that it behooves the railways to watch their demands closely. This is true particularly when dealing with railway improvements within cities, where the demands made by factions or groups are liable to be out of all proportion to the needs of the situation, either from the standpoint of the public or the railways.

This attitude is evidenced frequently in demands for expenditures for such improvements as grade separations and in specific designs or layouts for such improvements. With apparent utter disregard for any but their own selfish interests, frequently so local in character as to make them absurd, the public bears constant watching. It is fortunate that many roads fully appreciate this.

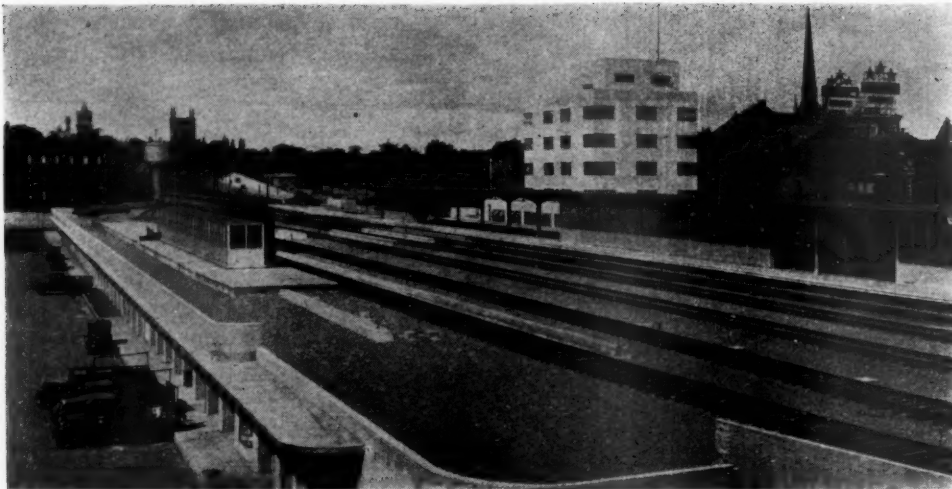
It is not suggested that the railroads should resist reasonable demands, and few do. Thus, while practical judgment must of necessity enter into more features of railway construction today than ever before, there is little attempt to disregard the importance of pleasing design and architectural appearance. A good example of this is seen in the extended improvements completed recently on the Toronto, Hamilton & Buffalo at Hamilton, Ont., including the separation of grades and the building of a new passenger station, which are described and illustrated in this issue. The solution of an admittedly unfavorable situation is both adequate and pleasing; yet a part of the public has been critical, especially of the station-office building—it should have been larger and more imposing, its lines are too severe, its limestone facing is too plain, etc.

Designed by well-known architects, the new station adequately meets the needs of the community it serves, is modern and even outstanding in several respects, far surpassing in every way the old building which it supplants.

Some of the criticism has undoubtedly been an outgrowth of the modification of more elaborate plans, prepared prior to the depression and the severe inroads on the railway's passenger business. Regardless of the source of the criticism, the Toronto, Hamilton & Buffalo has made an outstanding contribution to the appearance and well-being of the city.

Indexes to Volume 95

The indexes to the latest volume of the *Railway Age*, July to December, 1933, will be ready for distribution next week and copies may be had by those subscribers desiring them. Requests should be addressed to the Circulation Department, *Railway Age*, 30 Church Street, New York City. Subscribers who have in previous years made applications for the index need not apply again; they will continue to receive it as long as they continue to subscribe.



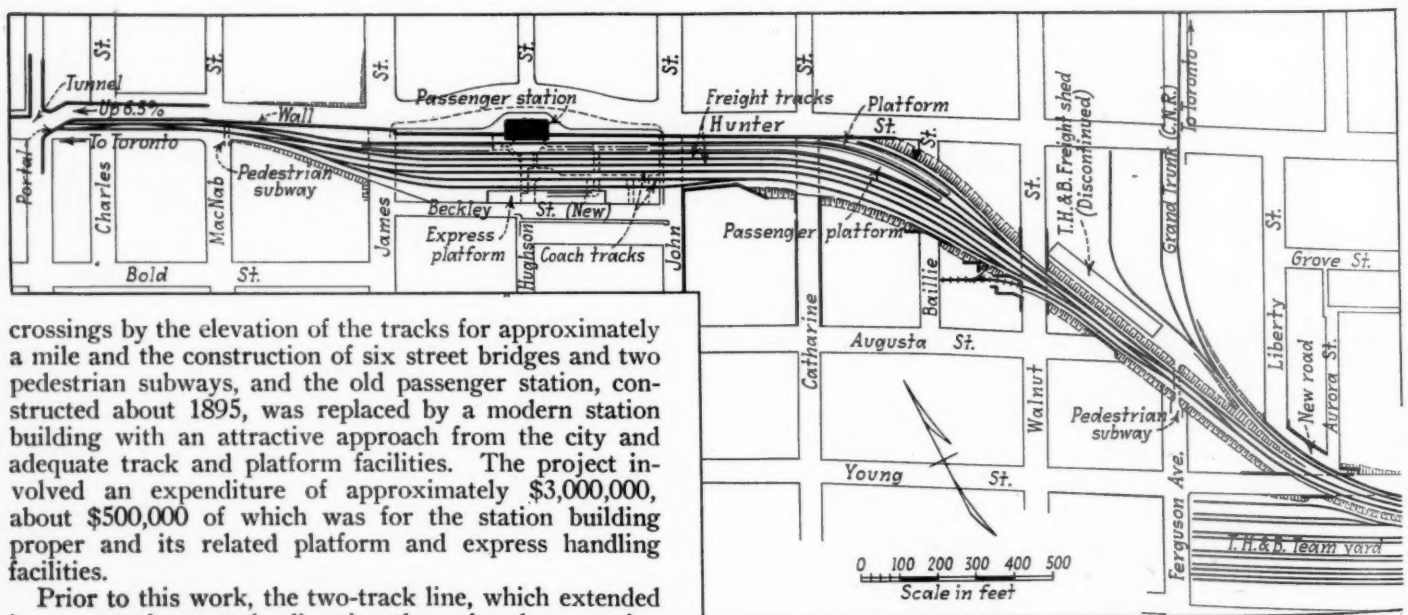
Looking Northwest Over the Elevated Station Tracks, Showing the Passenger Station in the Background and the Sub-Track Level Express Facilities Along New Beckley Street in Foreground

Railway Facilities Modernized at Hamilton, Ont.

Attractive passenger station is built by the Toronto, Hamilton & Buffalo, which has also elevated its tracks to eliminate all grade crossings

LATE in 1930, the Toronto, Hamilton & Buffalo began a grade separation and station improvement project at Hamilton, Ontario, which, as now finished, is one of the most complete projects of its kind that has been carried out in Canada in recent years. In this project, street and rail grades were separated at eight

straight line down through the center of Hunter street, past the station, to a point just east of Catharine street, about 2,000 ft. from the tunnel. Within this distance, Hunter street and the tracks were crossed at grade by five streets, Charles, MacNab, James, Hughson and John. After crossing Catharine street at grade, the tracks



crossings by the elevation of the tracks for approximately a mile and the construction of six street bridges and two pedestrian subways, and the old passenger station, constructed about 1895, was replaced by a modern station building with an attractive approach from the city and adequate track and platform facilities. The project involved an expenditure of approximately \$3,000,000, about \$500,000 of which was for the station building proper and its related platform and express handling facilities.

Prior to this work, the two-track line, which extended in an easterly-westerly direction through a busy section of the city, emerged from a tunnel about 1,000 ft. west of the old passenger station and then continued in a

General Plan of the New Elevated Track and Passenger Station Layout of the Toronto, Hamilton & Buffalo at Hamilton, Ont.

swung to the southeast for a distance of approximately 1,500 ft., crossing Baillie, Walnut, Ferguson and Young streets at grade, and then curved again more directly to the east and crossed Wellington street and Victoria avenue at grade.

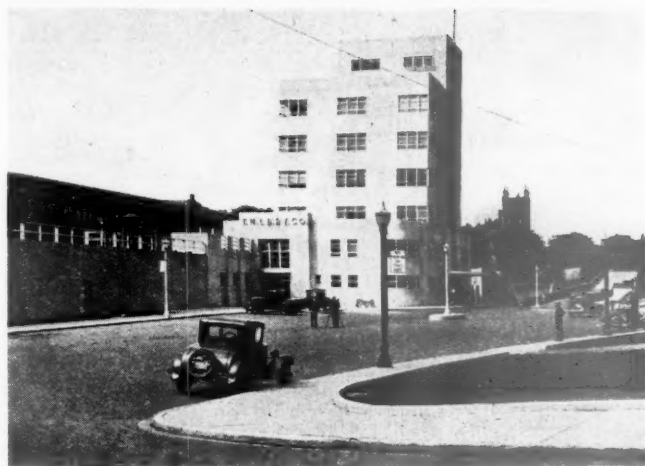
In the new work, the tracks were raised from the tunnel portal east to a point about 700 ft. east of Victoria avenue, and, at MacNab street, about 500 ft. from the tunnel, they were shifted to the south, entirely out of Hunter street, on to property which the railroad acquired. Near Baillie street the new alignment joined the old alignment to the east.

In connection with the track elevation, street subways were constructed at James, John, Catharine, Walnut and Young streets, and at Victoria avenue, and pedestrian subways were provided at MacNab and Ferguson streets. Charles, Hughson, Baillie and Wellington streets were closed on both sides of the tracks, existing or new marginal streets eliminating inconvenience to traffic. West of MacNab street, where the tracks remain on their old alignment, formerly in Hunter street, rail and street traffic were completely separated by shifting Hunter street slightly to the north and constructing a concrete retaining wall between the street and the tracks. Incidentally, the old-level profile of Hunter street west of MacNab street was changed and the newly located section of the street was carried up on a 6.5 per cent grade, retained on both sides by walls, to the top of the tunnel portal where it connected with Park street, which crosses over the tunnel just back of the portal. Instead of crossing the tracks as formerly, Charles street, on the north side, was given a connection with the new grade of Hunter street at MacNab street by means of a new marginal street.

The new passenger station was built partially on Hunter street, facing north up Hughson street, and Hunter street at this point was widened and made to swing in an arc around the front of the new structure. As a result of this and the other changes mentioned, which necessitated the purchase of considerable property and the demolition of approximately 100 houses and similar structures, Hunter street, formerly occupied by tracks west of Catharine street, was made a wide paved street, continuous and free of rail traffic all of the way from Catharine to Park street at the tunnel.

The separation of grades at the different streets within the project was effected by a combination of track elevation and street depression which was more feasible and economical at the east end of the work, and practically essential at the west end of the work because of the fixed grade of the tracks within the tunnel. Originally, the tracks emerged from the tunnel on a grade of 0.75 per cent ascending eastward, and then, at MacNab street, started on a downward grade, which continued to a point opposite the old station layout. Here the grade changed again to one slightly ascending eastward and continued as such well beyond Victoria avenue.

In the track elevation work, the 0.75 per cent ascending grade at the east end of the tunnel was extended



Looking West on Hunter Street Toward the New Passenger Station and Elevated Tracks at Hamilton, Ont.

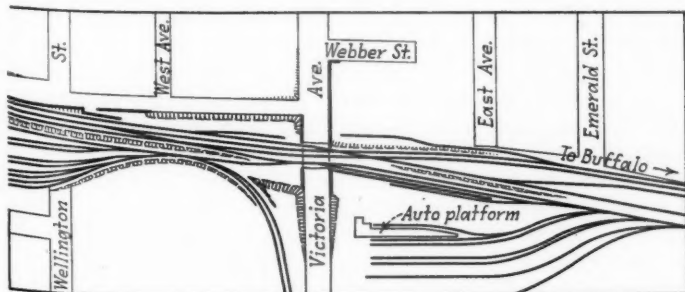
eastward about 800 ft. to James street, beyond which point it was changed to 0.2 per cent ascending and carried as such through the new station layout to Catharine street. East of Catharine street the new tracks are level for approximately 800 ft., about 13 ft., above the old level, and then drop off on an easy grade to a connection with the old level about 700 ft. east of Victoria avenue. Coupled with the elevation of the tracks, James street was lowered a maximum of about 13 ft., John street about 10 ft., Catharine street about 6 ft., Walnut street about 7 ft., Young street about 13 ft., and Victoria avenue about 16 ft. This necessitated quite extensive grading and sewer changes at several of the streets, but the street grades were held to a maximum of about 7.5 per cent, attained only at Victoria avenue, which causes no inconvenience to vehicle traffic.

Work Done in Two Stages

The track elevation work was carried out in two principal stages, the first being aimed primarily at establishing high-level operation over at least one track as quickly as possible with the least inconvenience to street and rail traffic, and the second involving all remaining work necessary for the completion of the project, including the widening of fills and bridges and the completion of the street approaches.

The removal of the tracks from Hunter street was highly desirable, not alone from the standpoint of the city, but also from the standpoint of the railway since it permitted much of the new construction in the new station area to be completed without interfering with or being inconvenienced by rail traffic, which was continued on the old alignment until the first high-level tracks were put in service. East of Catharine street, where there was little or no change in the alignment of the tracks, a temporary detour track was constructed north of the existing tracks and was made to carry all train movements past the work. This track began at about Baillie street and, near Young street, was given connection with an existing single track of the Canadian National, which, under an agreement, was utilized temporarily in getting around the new construction area, or, at least, to permit the construction of the new fill sufficiently wide for one track, and the south halves of the street subway bridges.

Proceeding at the different streets in accordance with a program designed to keep alternate streets open to traffic at all times, the bridge abutments were put in prior to closing the streets, and then excavation was made for the subways and subway approaches in so far



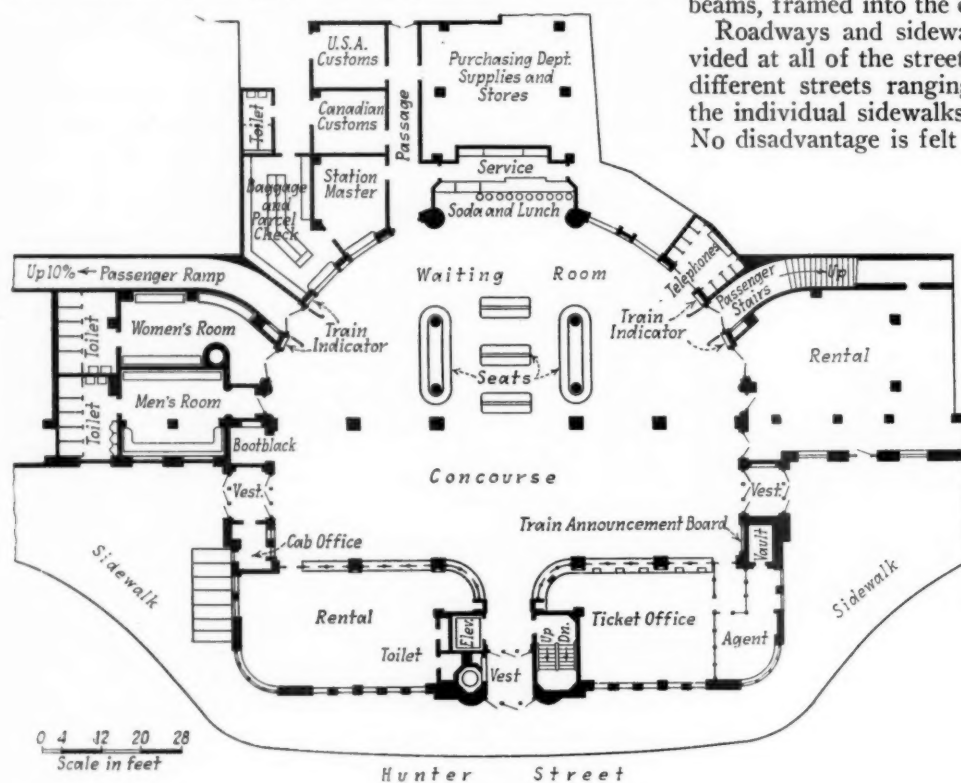
as that was possible. While this work proceeded, most of the retaining walls to support the new track fill, which were located principally along the north side, between MacNab and Baillie streets, facing on Hunter street, were constructed, and the fill itself was built up for through single-track operation, utilizing the material removed in the excavation of the street subways. As a matter of fact, practically all of the fill required in the entire project, which amounted to approximately 145,000 cu. yd., was secured in excavating for the subways. All of the material was moved into place by motor trucks.

Single-track, high-level operation was begun on December 3, 1931, completely separating rail and street traffic through the city. Immediately following this, a start was made in removing the old tracks from Hunter street and the work of the second or final stage of the track elevation itself was put under way. This latter work included principally the completion of the north

usual about the design or construction of the bridges, except that they all have both curb and center-of-the-street columns, employed to minimize the depth of the decks and thereby reduce the amount of rise in the tracks or depression in the streets necessary to secure a minimum underclearance of 14 ft. All of the bridges are designed for Cooper's E-70 loading and all are of the I-beam type with a concrete slab deck; except the one crossing Young street, which is of through girder construction, with a concrete deck. All of the I-beam bridges have concrete-encased fascia girders, which enhance their appearance from the street level and prevent ballast or other objects from falling into the streets.

The deck slabs of all of the bridges were waterproofed with cotton fabric in asphalt, which was given protection against the abrasive and cutting action of the track ballast by a layer of 1½-in. asphalt plank. In all cases, the curb and roadway columns are large section H-beams, framed into the cross girders of the deck system.

Roadways and sidewalks of adequate width are provided at all of the streets, the combined roadways at the different streets ranging from 36 to 44 ft. wide, and the individual sidewalks from 6 ft. to 13 ft. 6 in. wide. No disadvantage is felt in the use of the columns in the



General Plan of the Passenger Station Interior, Showing the Arrangement of Facilities

approaches to the street bridges, the completion of the filling, and the extension of certain of the bridges themselves northward to their full widths. For all practical purposes, the track elevation work was completed late in 1932, but the new passenger station, constructed as an important part of the improvement project, was not started until the track work was largely out of the way, and was not put in service until June 26, 1933. Between the inauguration of high-level operation in December, 1931, and the opening of the new station, the old station, a three-story brick and brown stone structure, constructed in 1895, was continued in service. This was made possible by the construction of a temporary wooden passenger platform to serve the newly raised tracks, and connecting this with the station building by stairs and a wide sheltered walkway of timber construction.

Of the six street bridges required in the Hamilton project, the largest are at James, John and Catharine streets, within the new station area, which carry nine, eight and six tracks, respectively. The bridges at Walnut street, Victoria avenue and Young street carry five, four and three tracks, respectively. There is little un-

usual about the design or construction of the bridges, except that they all have both curb and center-of-the-street columns, employed to minimize the depth of the decks and thereby reduce the amount of rise in the tracks or depression in the streets necessary to secure a minimum underclearance of 14 ft. All of the bridges are designed for Cooper's E-70 loading and all are of the I-beam type with a concrete slab deck; except the one crossing Young street, which is of through girder construction, with a concrete deck. All of the I-beam bridges have concrete-encased fascia girders, which enhance their appearance from the street level and prevent ballast or other objects from falling into the streets.

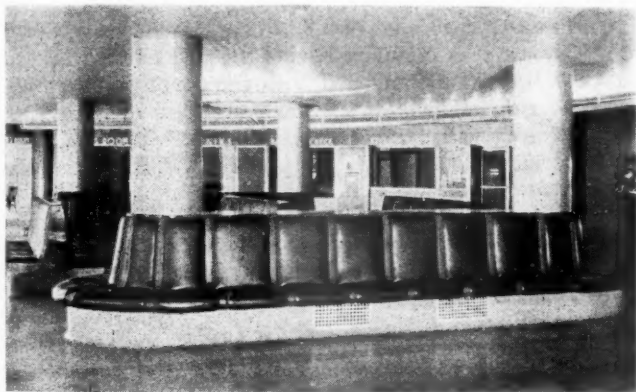
The most difficult bridge to design and erect was that over Young street, not alone because of its severe skew of about 22 deg., and the fact that it carries two T. H. & B. tracks on a curve of 5 deg. 30 min., but also because it carries a single track of the Canadian National on a grade considerably lower than that of the T. H. & B. tracks. On the other hand, the work at this point was simplified somewhat by the fact that the entire structure could be completed during the first stage of the project and without interference by rail traffic.

The retaining walls and abutments required in the project, which have an aggregate length of 6,750 ft. and range in height from 12 to 24 ft., are all of the gravity type and were constructed of concrete made in accordance with the water-cement ratio. All exposed faces of the walls were given a bush hammered treatment, which affords a pleasing appearance, and, at the same time, removes the temptation to malicious defacement often present in smooth walls.

Directly on each side of the station building, on the north side of the tracks, the walls are provided with a structural steel balustrade, painted with aluminum paint, but generally they are surmounted by a light concrete parapet, which not only provides the safety factor desired, but which also completely obscures from the street level the track structure and the running gear of passing or standing trains.

Station Facilities Are Well Laid Out

Of no less importance and interest than the track elevation is the pleasing and adequate passenger station building, along with its effective and convenient layout of track, platform and auxiliary station facilities, including those for the handling of baggage and express. The new station building is a steel frame structure faced with Queenston limestone, which rises to a height of seven stories, including a penthouse directly in the center at the front, which produces a tower-like effect. The main body of the building above the second floor is rectangular in shape, 63 ft. 4 in. across the front and 43 ft. 6 in. deep, and, with 9-section rectangular windows and no corner columns, has perfectly straight lines, devoid of ornamentation. Below the second floor, two-story wings, 24 ft. wide, flanking both sides of the building proper, give breadth and proportion to the



Trough-Type Lighting Reflectors and Leather Covered Upholstered Settees Add to the Restfulness of the Waiting Room

structure as a whole, and, having curved outer corners in harmony with the curvature in Hunter street, effectively soften the lines of the upper stories.

Directly back of the station at the second floor level is the station track layout, which extends east from James street, and south a distance of approximately 175 ft. to a new street, called Beckley street, opened along the south side of the elevated railroad property. From the station south, the new station tracks include, first, the two through passenger tracks, which are spaced 32 ft. center to center and served by a wide concrete island low-level platform. This platform extends from James street east to Catharine street, a distance of approximately 1,100 ft., and, for a considerable distance both ways from the station, 121 ft. west and 347 ft. east, is covered by a steel frame, butterfly-type shed, painted with aluminum paint. Beyond the passenger platform tracks there are, in order, two through freight tracks, then two coach tracks, and then an express car track, beyond which there is a low-level concrete, express-handling platform approximately 300 ft. long.

An interesting feature in connection with the track layout is the fact that the south half, from the center line of the station east to John street, is supported on a steel and concrete viaduct, providing space beneath for large express, baggage handling and commercial areas, which

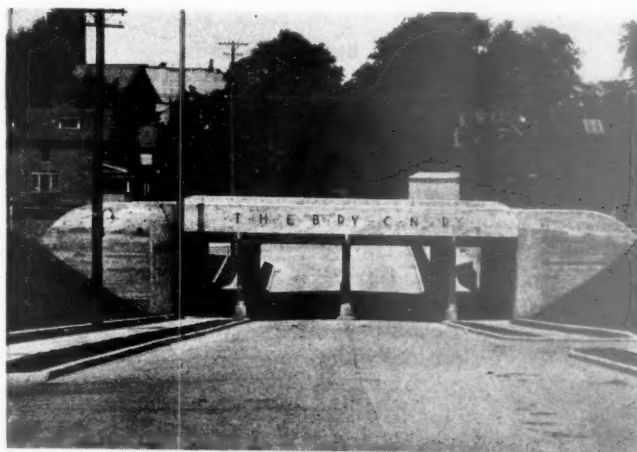


The No. 12 Gage, Enameled Steel Wainscoting and the Liberal Use of Stainless Steel and Aluminum Are Features of the Station Concourse

face on the new street opened along the south side of the tracks. Sub-track passageways and ramps connect these areas with both the passenger and express platforms. The remainder of the station track area is supported on a solid earth fill.

Station Interior Arrangement is Convenient

One of the most pleasing of the facilities provided in the Hamilton work is the passenger station proper, including essentially the concourse and waiting room areas, which occupy the street level floor of the station building. Passing through the main entrance to the station, located in the center of the front of the building, one finds himself in a rectangular, two-story concourse, extending about 45 ft. to the right and left and about 25 ft. deep, with its rear face opening directly into a one-story semi-circular waiting room area about 40 ft. deep. To the immediate right along the front face of the concourse are a series of six grilled-front ticket windows. Diagonally to the right, just back of the west wing, which is occupied by a concession, is a train gate which opens into a curved stair well leading to the passenger platform. In a corresponding location diagonally to the left, and just back of the east wing, which is occupied by toilet and rest room facilities for both men and women, is another train gate which leads to a ramp extending up to the east end of the passenger platform. Both the stair and ramp wells are entirely enclosed against the weather by steel frame headhouses with sides of glazed steel sash. Both the exterior and interior



The Overhead Crossing of Victoria Avenue Is Typical of the Beam-Type Bridge Construction Used

of the headhouses and the concrete walls of the ramp and stair wells are painted with aluminum paint.

Side entrances to the station are located at each end of the concourse, and the space around the semi-circular waiting room area is occupied by concessions, telephone booths, a telegraph office, baggage and parcel rooms and a lunch counter. This latter facility is centrally located in the deepest part of the room and, while modest in size and service, meets all demand for dining facilities.

One of the most unusual features of the new station interior is the comprehensive use made of sheet steel for wainscoting and column coverings. This material, of No. 12 gage and finished with seven coats of baked-on enamel, is used to form a 12-ft. wainscoting around the entire station interior, and, with a special aluminum finish, is used as a covering on all interior columns. In all cases the joint fastenings of the wall sheets are concealed, resulting in a smooth wall finish.

Interior Coloring and Lighting are Pleasing

Two impressive features of the station interior are the harmony of color which prevails throughout and the unusually attractive lighting fixtures provided. The finish of all of the steel wainscot is of deep terra cotta red, above which, in the concourse, the walls are painted a primrose yellow and the ceiling a deep reddish brown, in harmony with the wainscot. In the waiting room area the ceiling is painted light yellow, the steel column coverings are finished in bright aluminum enamel, and the back-to-back settees, of ample seating capacity are upholstered and have dark brown leather coverings. The flooring throughout the station is of terrazzo tile in designs of three harmonizing colors, and much of the trim, including window grills, railings, a large clock and the lighting fixtures, are either of aluminum or stainless steel. Adding to the pleasing touch effected by these materials, all designating or direction signs within the station are applied directly on the dark colored wainscoting with silver leaf.

Indirect lighting is used almost entirely throughout the station, except for such soft direct light as comes from wall and ceiling fixtures fitted with amber glass. Within the waiting room the two main lighting fixtures are trough-type reflectors of aluminum, suspended from the ceiling, one in the shape of a circle directly in the center of the room, and the other in the shape of a large semi-circle, which skirts around above the settee area. The main lighting fixture in the concourse is a long open-work trough-type reflector, constructed of aluminum bands and ribs, with a lining of amber glass. This unit extends longitudinally beneath a long rectangular recess in the ceiling and affords both soft indirect light and soft diffused direct light.

General Building Details

The floors of the new station, above the street level, including a mezzanine floor above and along the front of the station concourse, are utilized entirely for railroad offices and are reached by an elevator and stairs from the main station entrance vestibule. These floors, like the lower floor, are of fireproof construction throughout, having steel and concrete floor structures, hollow tile walls, steel doors and trim, and all-steel window sash and frames.

The basement of the building houses the boiler for heating the station and offices and provides a large record storage area and separate rooms for electrical relays, transformers and a switchboard. Some difficulty was encountered in excavating for the basement and foundation walls, since the dry and stable blue clay which was found for footings was overlaid with a water-bearing sand. In

overcoming this, a cofferdam was driven entirely around the basement area, and the concrete foundation walls were provided with integral waterproofing. A sump, equipped with a pump, is provided at the lowest point in the basement floor, being below sewer level, but this is intended entirely for internal floor drainage and boiler waste, and was not provided because wall leakage has occurred or is anticipated.

This project was carried out under the direction of H. T. Malcolmson, vice-president and general manager of the T. H. & B., and under the direct supervision of R. L. Latham, chief engineer. The track elevation work, which involved approximately 145,000 cu. yd. of excavation and filling, the placing of approximately 45,000 cu. yd. of concrete, and the erection of approximately 3,800 tons of structural steel, was done under contract by the Dominion Construction Corporation, Toronto, Ontario. The architects for the passenger station were Felheimer and Wagner, New York, while the construction of the station was done under contract by W. H. Cooper of Hamilton.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended January 6 totaled 499,939 cars, an increase of 49,317 cars as compared with the preceding week and of 60,470 cars as compared with the corresponding week of last year. It was, however, a decrease of 71,739 cars as compared with the corresponding week in 1932, which did not include the New Year's holiday. All commodity classifications showed increases as compared with the week before but grain and live stock showed reductions as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, January 6, 1934

Districts	1934	1933	1932
Eastern	118,553	97,352	130,403
Allegheny	98,993	80,181	112,471
Pocahontas	36,229	35,363	35,852
Southern	73,398	71,161	87,422
Northwestern	581,189	49,264	65,422
Central Western	73,127	66,635	90,103
Southwestern	41,450	39,513	50,005
Total Western Districts	172,766	155,412	205,530
Total All Roads	499,939	439,469	571,678
Commodities			
Grain and Grain Products	23,389	24,199	27,492
Live Stock	15,628	15,753	24,566
Coal	130,373	104,689	125,927
Coke	7,627	5,382	6,005
Forest Products	14,878	12,413	16,821
Ore	2,826	1,239	3,194
Mdse. L. C. L.	134,367	133,656	183,470
Miscellaneous	170,851	142,138	184,203

Car Loading in Canada

Car loadings in Canada for the week ended January 6 totaled 34,362, which was 5,002 cars above the previous week's total, and the index number rose from 64.04 to 77.10, according to the compilation of the Dominion Bureau of Statistics. Loadings in the first week of 1933 totaled 26,782.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Jan. 6, 1934	34,362	18,791
Dec. 30, 1933	29,360	14,269
Dec. 23, 1933	35,623	18,696
Jan. 7, 1933	26,782	14,995
Cumulative Totals for Canada:		
Dec. 30, 1933	2,032,157	956,573
Dec. 31, 1932	2,175,625	972,961
Dec. 26, 1931	2,575,450	1,282,623

Is It Hard for Shippers to Use Railway Service?

Should loading and stowing requirements be changed?—
Should classifications be simplified?

Is it hard for shippers to use railway service? More specifically, do loading and stowing requirements, shipping rules and other regulations of various kinds detract from railway service and encourage shippers to use trucks? Is the added cost of these requirements a factor? The answers involve many considerations. In the first place, why do shippers use trucks? In a recent survey, 5,180 shippers out of 7,000 questioned, or 74 per cent, reported that they used trucks because the service is more convenient rather than because it is cheaper. These replies raise in turn the question, What is convenience?

When a shipper uses a truck, the vehicle backs up to his platform and the truck attendants do the loading. Similarly, at the consignee's place of business, they do the unloading. Dunnage is seldom required. Lighter freight containers and less crating may sometimes be used, the latter statement being qualified because 90 per cent of the products shipped by trucks are packaged in the same containers as those used when the products are shipped by rail. When a shipper uses the railway, on the other hand, he must transport the merchandise to the freight station or if he has his own spur track, must load it himself and furnish the dunnage. At destination, the shipment must be called for at the freight station and if the car is spotted on a side track, in a yard or on a spur, the consignee must unload it.

As a concrete example, contrast the shipping of household furniture by rail and by truck. A rail shipment must be crated, carried to the freight car and loaded.



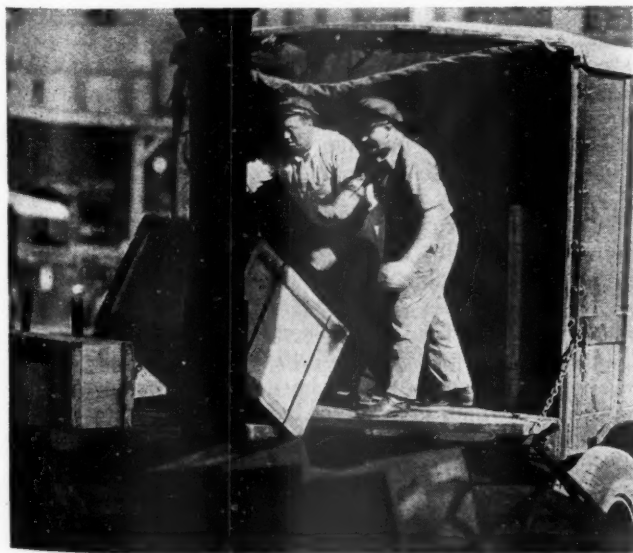
Shipping by Truck Is Convenient

At destination, it must be unloaded, carried to the dwelling and the crating removed. When household furniture is shipped by truck, the van backs up to the door of the shipper and the movers prepare and pack the articles in the vehicle, protecting them with pads. At destination, the furniture is carried from the van into the dwelling, where it is arranged in the rooms without further preparation.

The factors which prompt shippers to employ trucks instead of railways place the rules and regulations governing rail shipments in a defensive position. Truck operators have few, if any, packing and loading restrictions and have no complicated classifications and tariffs. When a shipper uses the railway, the cost of crating furniture is often greater than the cost of shipping. Crating requirements have been developed for the purpose of eliminating claims, not to suit the convenience of the shipper. As a result, these requirements make it hard for shippers of many commodities to use the railways.

Can the railways relax their packing and loading requirements and operate more largely as the truck owners do? On some commodities this is possible. Several railroads, for example, are now handling household furniture without crating, protecting it with heavy pads. The elimination of all restrictions on all commodities would, of course, lead to increased loss and damage which would be costly for the railways since the railways are liable under the law for claims due to these causes.

Perhaps it would be advantageous for the railways to bear the cost of dunnage. Under present rules, shippers using open-top cars are given a 500-lb. dunnage allowance, but there is no dunnage allowance on closed cars. As a result, the weight of any dunnage used is included in the weight of the shipment and the railways collect revenue for hauling it the same as for the com-



The Shipper Must Bring His Products to the Freight Car and Load Them

modity itself. On this basis, it is argued by some that the railways can afford to bear the cost of dunnage.

Another complication of railway service which does not apply to truck service to the same degree is the rate structure. In general, railway rates are divided between carload and l.c.l. rates but these are amplified by a wide variety of class, commodity, combination, through, differential, joint, local, maximum, mileage, minimum, proportional and other provisions. Railroad freight rates are the result of a long process of development and revision to meet the needs of one community after another.

The classification of freight is the first step in rate making. The second step is the determination of what the charges shall be per unit of weight for each class of goods and for the large number of unclassified individual commodities. Because of the large number of products shipped in this country, railroad classification tariffs are voluminous, although some attempts are being made to simplify them. As evidence of this, in the last revision of the western classification 78 pages were eliminated. Tariffs and classifications are still so complicated, however, that a shipper experiences difficulty in determining the tariff rate for a commodity, let alone for a group of commodities. Such rates make it hard for the shipper to use the railways. One way by which this situation can be rectified is by all-commodity rates.

Another feature of tariffs which confuse the shipper are the numerous notes and exceptions which are included. The tariffs are so complicated that even traffic solicitors have difficulty in interpreting them. Typical of these notes is the following taken from a tariff: "Rates subject to this note will be subject to rules for constructing combination rates on sand, as published in Tariff No. 228, I. C. C. No. U. S. 1, supplements to or successive issues thereof."

One of the difficulties which confronted the southwestern lines when they instigated storedoor delivery was the tariff. It provided for a five-cent allowance where the freight was delivered to the stations by the shipper himself. The trucks then made an offer of 10 cents per 100 lb. and checkmated that opportunity to secure traffic. The railways then conceived the idea of publishing tariffs providing through service where the revenue amounted to a certain amount, largely eliminating the shipper's objection to the five-cent allowance. Immediately the truckers offered to receive freight until 7 or 8 p. m. for forwarding on overnight delivery. With their merchandise trains leaving Kansas City, Mo., around 6:30 or 7 p. m., it was difficult for the roads to meet those hours. A few months later, however, the railways set back the closing time for the receipt of freight at their rail stations to 6 p. m. and were still able to make overnight deliveries over a distance of approximately 300 miles. By this means they have regained much traffic.

Minimums Should Be Changed

Still another factor which discourages shipping by rail is the present minimum weights or minimums required for carload rates. In the past, minimums were so established as to encourage the heavier loading of cars. So long as seasonal buying prevailed, shippers could adapt themselves to the requirements. Now hand-to-mouth buying is the rule rather than the exception and large minimums encourage shippers to use trucks.

The effect of minimums is illustrated by a receiver of cement. A country merchant who was ordering a carload of cement once a month was asked why his shipments had been discontinued. His reply to the railroad representative was as follows: "You had a minimum of 20,000 lb. I built a little warehouse to

accommodate 20,000 lb. because that is what I needed. You increased your minimum to 30,000 lb. I cannot take care of this increased amount in my warehouse, nor do I want 30,000 lb., so I now get my shipments in 10,000-lb. lots by truck. If you will go back to the 20,000-lb. minimum, I will again do business with you."

A shipper, in discussing minimums, says, "It has been my contention as far back as 1927 that the railroads, by maintaining high carload minima, were forcing receivers to patronize motor trucks. If a receiver today can purchase 12,000 lb. of any commodity and move it by motor truck without being penalized by a higher freight charge, he is going to use that service. It is seldom that we find the motor truck patronized because of preference or because of its supposedly superior service. It is patronized by the wholesaler as a matter of self-preservation. With his limited capital, a merchant must buy in small quantities. Competition requires that he move his product from the producing point to destination at the same freight charge that he would pay if he bought a trainload.

"The ideal arrangement for the local manufacturer, the

In the Issue of February 3

The next article of the series, which will appear in the *Railway Age* of February 3, will deal with freight solicitation. It will describe the methods employed by various railroads, emphasizing those that have been most successful.

local wholesaler and the jobber would be high l.c.l. rates and low carload minima, with the proper relationship between carload and l.c.l. rates. That would enable these people to purchase reasonable quantities from the manufacturer and would prevent direct competition from other manufacturers or competitors located several hundred miles distant.

"We have been waging a fight with the rail carriers for lower carload minima, 10,000 or 12,000 lb., and we believe that rail carriers would be a great deal better off to haul 36,000 lb. of freight in three separate movements at the carload rate than to say, 'no, we will not haul three cars of freight for the revenue we should get for one.'"

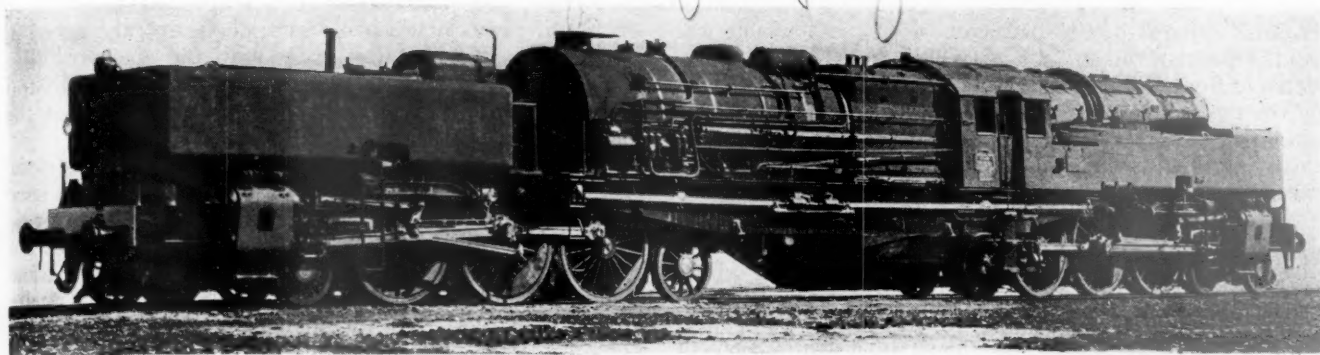
That these various measures are not without merit is shown by the fact that numerous special or emergency rates introduced by the carriers in various classification territories to meet truck competition have been effective. These special rates are designed to give the shipper as much latitude as possible by removing restrictions. They enable him to make mixed shipments at low rates in any quantity.

In the Western Classification territory, the all-commodity rate applies to freight of all kinds, with the exception of perishable products, live stock and long articles. Under this rate, 10,000 lb. of mixed products can be shipped for 72 per cent of the first-class rate, 25,000 lb. at 57 per cent and 40,000 lb. at 44 per cent.

Another measure of this character is the general store supply rate which is in effect from all important jobbing points to any point within the territory. It applies to commodities and is a specific rate in cents per 100 lb. regardless of quantity. Commodity rates are a fixed percentage of the first-class rate and include cereal beverages, bakery goods, butter and eggs, canned goods, cheese, confectionery, cooperage, drugs, medicines and

(Continued on page 74)

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The Beyer-Garratt High-Speed Passenger Locomotive for the P. L. M. Algerian System

A High-Speed Articulated Locomotive

Beyer-Garratt locomotive for Algerian service, with 71-in. drivers, operates smoothly at over 80 miles an hour

THE Mallet articulated type locomotive is essentially a slow-speed power unit which, with one or two exceptions, has never been considered for high-speed passenger service in America. The Garratt type articulated locomotive was first built for relatively high speeds in 1912. Since that time many others have been built for similar service. The driving-wheel diameters of these locomotives range from less than 5 ft. to 5 ft. 6 in., and they have demonstrated their ability to maintain speeds of from 50 to 55 m.p.h., under which conditions they are said to operate with great steadiness.

During 1932 a Beyer-Garratt locomotive was built by the Societe Franco-Belge de Materiel des Chemins de Fer to the designs of Beyer, Peacock & Co., Ltd., of England, for the Algerian System of the Paris, Lyons & Mediterranean. This articulated locomotive has established an unusual record for high-speed performance. It is of the 4-8-2 + 2-8-4 wheel arrangement, with driving wheels 70 $\frac{3}{8}$ in. in diameter and was designed for a maximum speed of 70 m.p.h. During an extensive series of tests on the main line of the parent system in France the locomotive reached maximum speeds of 78 m.p.h. and while being tested in Algeria reached a speed of 81.5 m.p.h. for a short time on a slightly descending grade. At these high speeds the locomotive rode steadily and smoothly.

The locomotive, which was built for express passenger service, has a total weight of 443,200 lb., with a maximum axle load of 39,700 lb. The tractive force, calculated at 75 per cent boiler pressure, is 47,400 lb. The locomotive has four single-expansion cylinders, 19 $\frac{1}{4}$ in. by 26 in., and the boiler carries a working pressure of 228 lb. per sq. in.

The superheater was furnished by the Superheater Company and is fitted with a multiple type throttle valve. The boiler has a total evaporating heating surface of 3,087 sq. ft. and a grate of 54.6 sq. ft. The total length of the locomotive overall is 96 ft. 5 in.

Before the locomotive was delivered to Algeria it was placed in service on the Paris, Lyons, Mediterranean

lines in France where it was subjected to the regular conditions of several types of passenger service and later to extensive dynamometer tests. The latter were made on the constant-speed principle with a number of braked

Principal Dimensions of the Beyer-Garratt High-Speed Passenger Locomotive

Railroad	Paris, Lyons & Mediterranean
Builder	Societe Franco-Belge de Materiel des Chemins de Fer
Type	4-6-2 plus 2-6-4
Service	Passenger
Rated maximum tractive force	47,400 lb.
Cylinders, diameter and stroke	19 $\frac{1}{4}$ in. by 26 in.
Valve gear, type	Walschaert
Valves, piston type, diameter	9 $\frac{7}{16}$ in.
Weight, total engine	443,200 lb.
Maximum axle load	39,700 lb.
Wheel bases:	
Driving	12 ft. 10 $\frac{3}{8}$ in.
Rigid	12 ft. 10 $\frac{3}{8}$ in.
Total, single engine	31 ft. 0 in.
Total locomotive	87 ft. 0 in.
Wheels, diameter outside tires:	
Driving	70 $\frac{3}{8}$ in.
Outer truck (four wheels)	39 $\frac{3}{8}$ in.
Inner truck (two wheels)	47 $\frac{3}{4}$ in.
Boiler:	
Type	Belpaire
Steam pressure	228 lb.
Fuel, kind	Bit. and briquettes
Diameter, first ring, inside	6 ft. 9 in.
Firebox, length and width	8 ft. 4 $\frac{7}{16}$ in. by 6 ft. 6 $\frac{3}{4}$ in.
Tubes, number and diameter	232-2 in.
Flues, number and diameter	50-5 $\frac{1}{4}$ in.
Length over tube sheets	15 ft.
Grate area	54.6 sq. ft.
Heating surfaces:	
Firebox	238 sq. ft.
Tubes and flues	2,849 sq. ft.
Total evaporative	3,087 sq. ft.
Superheating	743 sq. ft.
Comb. evap. and superheat	3,830 sq. ft.
Water capacity	6,600 gal.
Fuel capacity	7 $\frac{3}{4}$ tons

locomotives and at cut-offs varying progressively from 10 per cent to 50 per cent with full throttle. Loaded for a cut-off of 20 per cent and operating at 65 m.p.h., the maximum coal rate was 82 lb. per sq. ft. of grate per hour. With 15 per cent cut-off at 56 m.p.h. a front-end vacuum of 3 $\frac{1}{2}$ in. of water was produced with a back pressure of 2.9 lb. per sq. in. These tests were run with the

original exhaust-nozzle diameter of $6\frac{3}{8}$ in., which was later enlarged during the Algerian tests. No appreciable difference was observed between the work done by the two engines.

During the service tests in France the locomotive easily attained speeds of over 68 m.p.h. The highest speed reached was 78 m.p.h.

After the completion of the series of service trials and dynamometer tests in France, during which the locomotive made 10,000 miles, it was shipped to Algeria where it was to be placed in passenger service on a line between Algiers and Oran, a distance of 260 miles. The first series of tests to which the locomotive was subjected was on a portion of the line $42\frac{1}{2}$ miles, in which the grade is relatively level, except for one summit the approach to which varies from 1.1 per cent to 1.3 per cent for a distance of 8 miles southbound, and 2 per cent for 3.7 miles northbound. These tests were made with loads varying from 386 tons to 606 tons. During the tests with trains of about 550 and 600 tons and an average speed of 42 to 47 m.p.h. the coal consumption averaged 11.4 lb. per 100 gross ton-miles, including fuel for firing up, and 10.5 lb. per 100 gross ton-miles, excluding the coal burned in firing up. The evaporation averaged from 7 to 8.1 lb. of water (actual) per pound of coal. These tests were conducted before the diameter of the exhaust nozzle was enlarged. The pressure in the rear steam chest (the farthest from the throttle) varied from 9 to 14 lb. below the boiler pressure.

On the run with the 600-ton load a special study was made of the theoretical work done over a $24\frac{1}{2}$ -mile portion of the line, including the southbound grade. An output of 2,250 cylinder horsepower was maintained for 31 min., with a maximum of 2,660 hp. without unusual effort on the part of the crew. During this test the draw-bar horsepower at times exceeded 2,000. The rate of combustion, which in this type of locomotive is usually 50 lb. per sq. ft. of grate, reached 102 lb. for short distances on the heavy section of the line.

Early in May, 1933, the locomotive was subjected to a series of double-heading trials in which its performance was compared with that of two 4-6-0 compound locomotives, double headed, the combined tractive force of which is 50,000 lb. The point of interest in this test is the comparative performance on a grade 8 miles long, most of which rises at the rate of 2 per cent. With a 595 ton train the Garratt locomotive made the run up this grade in $24\frac{1}{2}$ min., with a minimum speed of 14 m.p.h. The double-headed locomotives required $26\frac{1}{4}$ min. with the same train and reached a minimum speed of 11 m.p.h. On the severest part of the grade the double-headed locomotives were worked nearly to full admission. The Garratt locomotive cut-off was 40 per cent.

Throughout the tests of the locomotive, covering 10,000 miles in France and an additional 5,000 miles in Algeria, no hot bearings were experienced and the locomotive was operated regularly without turning. Arrangements for the control of the locomotive from either side of the cab have been provided to facilitate operating the locomotive in either direction. During the long-distance trials between Algiers and Oran, on a return trip after the locomotive had operated 235 miles, the last 25 miles were made at speeds of 62 to 71 m.p.h.

The maximum speed attained was during a special run on June 16 with a light train of 132 tons. On the outward run the locomotive reached speeds of $74\frac{1}{2}$ m.p.h. for considerable distances on the slight up-grade and maintained about 60 m.p.h. for similar distances on the 1.3 per cent grade. On the return trip the speeds reached $81\frac{1}{2}$ m.p.h. for short distances at two points on the relatively level portion of the line. The entire run

of 30 miles was made in 27 min. at an average speed of 67 m.p.h. This run was made with the stack trailing; the locomotive rode smoothly and steadily. Piston speeds of over 1,600 ft. per min. were involved at the maximum speed attained.

On the 260-mile run from Algiers to Oran the total fuel consumption was 17,880 lb., including 1,100 lb. used in firing up. The fuel was 36 per cent briquettes and 64 per cent mine-run coal. The coal consumption per 100 gross ton-miles on a portion of the line where it had previously been 11.2 lb. fell to 9.5 lb. or 8.8 lb. exclusive of the fuel used for firing up. The evaporation averaged 7.4 lb. of water (actual) per pound of coal, including the fuel used for firing up, and 7.9 lb. per lb. of coal, exclusive of the fuel used for firing up. The total hp.-hrs. developed was 8,418, an average of 1,211 i.hp. over the line. The maximum i.hp. on this trip was 2,800. Fuel consumption averaged 2.15 lb. per i.hp., including the fuel used for firing up, and 1.99 lb. per i.hp., excluding the fuel used for firing up. The water consumption averaged 15.9 lb. per i.hp. These results were obtained after the exhaust nozzle had been increased to $7\frac{1}{2}$ in. in diameter.

During the constant-speed tests in France, operating at 15 per cent cut-off and 56 m.p.h., a front-end draft of $3\frac{1}{2}$ in. of water was produced with about 2.9 lb. back pressure. Under the same conditions of speed and cut-off after the exhaust nozzle had been increased to $7\frac{1}{2}$ in. in diameter a front-end draft of $2\frac{1}{2}$ in. was produced with 1 lb. of back pressure. With this nozzle size, front-end drafts of 5 to $5\frac{3}{4}$ in. of water are obtained on heavy grade operation. Drafts of this intensity obtained during the constant-speed tests at 65 m.p.h. were sufficient to burn coal continuously at the rate of 82 lb. per sq. ft. of grate per hour. This rate is considered sufficient for any service requirement on the Algiers-Oran line.

Maximum superheat temperatures during the tests were 716 deg. F. when the locomotive was operating at 45 m.p.h. and 40 per cent cut-off. The temperatures generally ran somewhat below this point. Front-end temperatures averaged from 572 deg. to 680 deg. F.

Is It Hard for Shippers to Use Railway Service?

(Continued from page 72)

chemicals, furniture, manufactured iron and steel products, paints, roofing materials and soaps and scouring compounds.

Special commodity rates applying to shipments of automobiles and parts from origin points in Official and Western Trunk Line territories to distributing centers have been successful in meeting truck and drive-away competition. This tariff, which permits loading and unloading privileges, has also been effective in meeting truck competition. Under this tariff, the shipper may stop a car three times enroute to load or unload and if the car is not filled when it departs, the shipper may stop it enroute to load additional merchandise. He may unload and load or merely unload at any of the three stops.

In conclusion, the regulations, restrictions and requirements governing shipping by rail confuse the shipper and encourage him to use trucks. This is a day with new competitive relationships which can be met only through the simplification of railway practices. If the railways are going to be successful, they will have to meet those conditions which the shipper favors and which make it easy for him to use other forms of transportation.

Minority Report Opposes St. Lawrence Treaty

Senator Wagner objects to wasteful duplication of transportation facilities

WASHINGTON, D. C.

AN unusually strong minority report opposing ratification of the "wasteful and unnecessary navigation program" of the St. Lawrence waterway treaty was filed in the Senate on January 10 by Senator Robert F. Wagner, of New York, as a member of the foreign relations committee, and immediately attracted attention because he has been known as one of the most enthusiastic supporters of many of the Administration policies. Submitted on the same day that the President in a message to the Senate urged ratification of the treaty, Senator Wagner's report not only offered detailed refutation of most of the arguments advanced by the President and those contained in a report compiled by various government agencies which accompanied the message, but also declared that the project represents pursuit of a philosophy of foreign trade "that this country has evinced its intent to relinquish by every administrative and legislative act of the 'new deal.'"

Senator Wagner has been one of the foremost advocates of public construction and was the sponsor in the Senate earlier in the year of the national recovery—public works bill, but he said in his report that "public works are designed to prime the pump of business, not to compete with private industry." Asserting that "rarely has any movement persisted so stubbornly in the face of the discrediting of everything that gave it birth," Senator Wagner said that proponents of the St. Lawrence scheme are "striving to improve our transportation facilities by the infusion of a new competitive element at a time when we know that competition has played havoc with transportation, and when we are committed to the commencement of a great program to unify and co-ordinate our transportation facilities." Later in his argument, however, he demonstrated that the proposed seaway is hardly likely to prove as potent a competitor of the railroads as is expected, and that the possible saving in freight rates would be accomplished only by the imposition of greater charges on the taxpayers.

Debate on the treaty was begun in the Senate on the following day by Senator Pittman, who spoke in favor of the treaty and bitterly criticized railroad opposition to it, but an agreement had been reached to withhold a vote until after Senator Copeland, of New York, also a strong opponent of the treaty, returns from a trip to Florida, and many predictions have been offered that the number of votes in support of ratification will fall considerably short of the necessary number. Senator Wagner summarized his report as follows:

Summary of Conclusions

1. The economic studies supporting the St. Lawrence treaty and the theories of economic relief upon which the project is based have been outmoded by the unparalleled changes in our economic life and thinking since 1929.
2. The cost to the United States would be \$573,136,000 instead of \$272,453,000 relied upon by the proponents of the treaty, who neglect interest charges, likely delays, and harbor improvements. The navigation project alone would cost the United States \$483,410,000 or \$30,170,500 per year.
3. The traffic estimates advanced in support of the treaty

were confessedly haphazard and problematical when made. In addition, they neglect the long-time trends in our international grain trade, the westward shift of our grain-producing areas, the decline in our foreign trade since 1929, and the recasting of our traditional attitudes toward international trade.

4. Even with the restoration of normal conditions, only about 5½ million tons of traffic would be available for the St. Lawrence waterway, contrasted with the claims of 20 to 30 million tons made in support of the treaty.

5. The waterway would neither relieve traffic congestion nor provide competition to the railroads. In any event, our present sound transportation policies are based upon unification of services, promotion of efficiency, and protection of the public by a proper rate-making policy, not upon the stimulation of competitive wastes that cause all costs to rise.

6. The extravagant claims made for the cheapness of this waterway transportation project compare water rates with rail rates, but neglect the original waterway costs borne by the American taxpayer. And even insofar as the shipper is concerned, the claim of an 8-cent saving on every bushel of grain transported must be reduced to 2 cents today and 4½ cents with the restoration of normal economic conditions.

7. The treaty proponents, in their claims that the reduction in freight rates will bring higher prices on even the grain that is not exported have been refuted by experience; and their assumption that our domestic prices are fixed on the Liverpool market is in direct conflict with our present agricultural policy of managing domestic prices by a system of internal control.

8. The American taxpayer would be assessed 15 cents for every bushel of grain shipped over the waterway in order to effect a saving to the shipper of 4½ cents in normal times. Even if our foreign commerce doubled the project would still involve a loss.

9. The development of water power, an unquestionable desirability, should not be hampered by association with an extravagant navigation project.

10. Public works projects should not include economically unsound and avowedly competitive enterprises. Nor should one dollar of every five spent by this country be devoted to the employment of Canadian workers and the purchase of Canadian materials, as would be the effect of the treaty provisions.

11. The project would cost the United States about three times as much as Canada.

12. Canada would receive the vast preponderance of the benefits. The grain available for traffic over the waterway is two-thirds Canadian. Almost four-fifths of the eventual water power will be devoted to Canadian use. The United States consents to the gratuitous and permanent internationalization of Lake Michigan.

13. It is unwise for American shipping to be forced to seek an outlet to the sea through foreign ports.

Following are extracts from the report:

I am completely in favor of the public development of cheap and abundant water power; and I want to emphasize at the outset that I do not oppose the power project upon which the treaty is based.

I do not desire to block the public development of power, but to free it from the economic handicap of association with a wasteful and unneeded navigation program.

Let me state that I am confident that the Canadian government would assent to a reconsideration of the power project alone. In fact, the Canadian railroad system is developed far beyond the present utilization capacities of the country and that country's willingness to go forward with the navigation project has been a concession to American sentiments in return for our participation in a power project which interests the Canadian people.

Inadequacies of Economic Studies Supporting the Treaty

There is a wide-spread belief that the St. Lawrence project has been studied and approved by responsible and impartial agencies. These much-touted studies, upon which the propo-

nents of the treaty rely, are now antiquated, and they did not pretend, even when made, to be complete or conclusive.

The reports submitted by the International Joint Commission in 1922 and by the Joint Board of Engineers in 1926 sanctioned the engineering feasibility of the project, but made no pretense to penetrate beyond the most vague generalities concerning its economic desirability.

The two chief economic analyses upon which the proponents of the treaty rely are the ones made by A. H. Ritter for the Great Lakes-St. Lawrence Tidewater Association in 1925, and the Department of Commerce report in 1926, which provided the food for the 1927 report of the St. Lawrence Commission headed by ex-President Hoover. I shall advert later to the hypothetical and erroneous character of these studies even when they were made, but the main consideration is that the issue of events has destroyed whatever validity they may have possessed originally.

Mr. Ritter's favorably disposed report came at a time when the cost of the project had been estimated at \$250,000,000 by the Joint Board of Engineers in 1921. It came before the estimate of \$536,000,000 by the engineers in 1926, before the estimate of \$712,000,000 by the reconvened board in 1929, before the estimates by competent independent agencies running into well over a billion dollars.

The Department of Commerce study is equally moribund. Since it was written the changes in our economic life have been the most far-reaching ever encompassed in so short a period in this country. Many of these changes have converted the factual basis of our society—they have redistributed our population, restated our employment problem and profoundly affected the character of our domestic industry and our foreign trade.

In view of this recognized realignment, it is astounding that so many people are willing to go forward with the St. Lawrence project on the basis of studies and suggestions made almost a decade ago.

Superimposed upon the alterations in the physical side of life have come equally extensive changes in our characteristic methods of remedying economic distress. Impervious to these, the advocates of the treaty are paying service to a theory of farm aid that has been completely exploded and that has been supplanted by a totally different method of agricultural relief. They are pursuing a philosophy of foreign trade that was disastrous in its consequences and that this country has evinced its intent to relinquish by every administrative and legislative act of the new deal.

In opposing the treaty I shall not raise the issue whether the whole United States is being saddled with inordinate burdens to confer primary benefits upon the areas tributary to the Great Lakes. I shall not even raise the question whether New York is paying too large a share or whether the Southeast or the far Northwest will be taxed without receiving benefits. I shall not decry a subsidy to the farmers.

Cost of the Navigation Project

Under the present proposal the state of New York is to pay \$89,726,000 as its contribution to the power project. Subtracting this from the total cost to the United States of \$573,136,000, we find that the cost of the navigation project alone to the people of the United States would be \$483,410,000.

Let us transfer this navigation cost to a yearly basis. The overhead, including 4-per cent interest on capital and 1 per cent for depreciation, would total \$24,170,500. During 1931-32 the Panama canal cost \$10,162,000 to maintain and operate. The St. Lawrence project has greater mileage, more harbors, more rigorous winters with the attendant problem of regulating ice levels, and 16 or 17 locks compared with 6 at Panama. Surely \$12,000,000 is a very conservative estimate for maintenance and operation, of which \$6,000,000 would be charged to this country. Thus the total yearly cost to the United States of the navigation project alone would be \$30,170,500.

Overestimates of Available American Traffic

The advocates of the treaty rely largely upon the estimates of traffic made by Mr. Ritter in 1925 and by the Department of Commerce in 1926. When confronted with the extraordinary diminution in our foreign trade during more recent years, they insist that ere the completion of the project we shall witness a return to normalcy. But they neglect to allow for the glaring assumptions and vague generalities of these earlier reports even when made.

The Ritter study in 1925 arrived at a total of 30,174,625 tons as the potential traffic of the St. Lawrence waterway. By potential traffic, Mr. Ritter meant the tonnage that might possibly be affected by the waterway. He did not differentiate between the kinds of goods that would be likely to use it and the kinds of goods that would be more likely to use other forms of transportation. He did not distinguish between destinations most likely to be served by the waterway and those that could be

served best by other forms of transportation. He did not separate the goods that might actually move over the waterway from those which he claimed would be affected by it, though admittedly moving over the railroads.

To say that the traffic which moves during the period when the waterway is closed will be subject to its favorable influence, even when such traffic could not be moved during the open season, and when it is of a type not likely to use the waterway even if it could be moved during that season, is to indulge in flights of fancy that are hard to understand.

In 1926 the Department of Commerce made an estimate almost as sanguine as Mr. Ritter's. They decided that the potential United States foreign trade which might move over the waterway was from 18,600,000 to 23,600,000 long tons. How did the experts arrive at this figure? In the first place, they took the total foreign trade of the United States. From this they subtracted our Canadian and Mexican trade, which they said was unlikely to move over the St. Lawrence. In addition, they subtracted certain types of commodities which are unsuitable for transportation over the waterway. Having thus arrived at a net figure, they based the potential traffic of the St. Lawrence upon the relationship that the population and productive capacity of the tributary area bears to that of the United States as a whole. An amazing procedure indeed. Was it forgotten that there are many other countries besides Canada and Mexico which cannot be served by the St. Lawrence route? Was it forgotten that even the most ardent proponents of the treaty look upon the St. Lawrence primarily as a means of establishing communication with Europe, while a large part of the exports of the tributary area go almost everywhere but to Europe? Was it forgotten that railways and trucking lines cannot be washed away overnight and their traffic transferred entirely to the St. Lawrence?

The advocates of the treaty have mistaken the Department of Commerce's haphazard and problematical estimate of possible traffic for a precise accounting of likely traffic. I call to their attention the words which the Secretary of Commerce wrote in his introduction to the report. He said:

No attempt has been made to determine the amount of the potential traffic which actually might move by any of the routes, nor has an estimate been made of the total possible savings. (Italics mine.)

It is now clear that estimates as to the total traffic available for the waterway must rest largely on the grain trade. With the grain potential set at 2,067,000 tons, hardly anyone would claim that the total movement of United States trade on the route would amount to more than 5,500,000 tons in normal times. There are many reasons why the St. Lawrence route is becoming of decreasing importance, even in normal times, as an outlet for wheat.

Foreign trade is not likely to occupy a more important place in our economic life than it did during the 1920's, even after the economic revival which now gives every sign of being well under way. During those glittering years we believed blindly that economic evils could be cured by developing an export market. We believed that we could profit indefinitely by the quixotic policy of selling supplies abroad and financing the loans with which to pay for our own products. This dream drew us into fantastic proposals for the stimulation of trade. Today we have regained a level-headed perspective and we are embarked upon a sound agrarian policy of domestic improvement in agriculture by means of production control and domestic price adjustments. Nothing could be more out of step with this new policy than the pursuit of an outworn and illusory cure-all for the improvement of American economic life.

Waterway Not Needed to Relieve Traffic Congestion

The St. Lawrence waterway project was inspired largely by the desire to relieve the congestion which existed in this country immediately after the World War. A 50 per cent increase in our railway traffic from 1915 to 1918, and the concentration of goods on the North Atlantic seaboard to meet our heavy export business, resulted in a shortage of 225,000 railway cars in 1920.

During the past decade, however, there has been no such problem. Our unparalleled volume of traffic between 1922 and 1929 was handled with complete ease. Improvements in routing and coordination rather than added equipment have produced an exceptionally high reserve capacity of cars and trackage. Between 1923 and 1928 the annual rate of increase of ton-mile traffic was 1 per cent. Even allowing for a 2 per cent annual increase in the future, there is no reason to believe that the railways could not handle this easily.

Even the proponents of the waterway do not claim that it is designed to provide transportation where none exists. They admit that it is designed to establish waterway transportation in competition with the railroads, and I propose to demonstrate that such competition would not be established to any significant

extent. The 27-foot channel would not promote real liner service between the Great Lakes and the coast. It would exclude over 85 per cent of the vessels and about 95 per cent of the tonnage of the passenger-cargo ships carrying United States foreign trade in 1926. It would exclude 65 per cent of the tonnage of all cargo ships entering American ports, 85 per cent of the fast vessels (12 knots and above), 65 per cent of the cargo liner tonnage between New York, Boston, and the North European ports, 87 per cent of the tonnage operating on regular schedule out of Montreal and Quebec, 81 per cent of the cargo vessels and tankers in intercoastal trade. With the tendency toward constant enlargement in the average size of ocean-going vessels, the completed project would be available only to the less important classes of steamers.

Even for the vessels that could use it, the St. Lawrence would never be a first-class waterway capable of giving the ports which it serves a position comparable to genuine seaboard cities. According to the most favorable estimates, the navigation season is only 7 months, and during part of this season the dangers of fog and ice are great. The 296 miles of restricted channels and canals out of a total of 1,244 miles from Chicago to Montreal, and another 75 restricted miles from Chicago to the ports on Lake Superior, would reduce the average speed of vessels for the entire trip to three-fourths of normal.

Sea vessels would not be prone to devote themselves to the St. Lawrence during the navigation season, with no other traffic to fill in during the winter months. It would be difficult for steamers not combining passenger and freight to operate profitably, and passengers would not be inclined to make the long inland journey by water. Because of the retarded speed, vessels traveling inland would not be able to participate in the remunerative mail, express, parcel post and refrigeration business.

During the very peaks of railway traffic, in October, November, December and March, the so-called "competitive waterway" would be closed. Competition of this limited, sporadic sort could never force a reduction in railway rates. No railroad, simply to combat so puny a foe, would be willing to threaten its whole rate structure during the whole year.

If the United States wants to support genuine, all-year-round competition to the railroads, the construction of an all-freight railroad would have manifold advantages over the St. Lawrence project. The capacity of the waterway is determined by that of its locks. If we assume that fully loaded boats of maximum size moved in a steady stream during the 195 days of the navigable season, only 42 million tons could pass through a lock. A double series of locks would mean a double line of navigation all the way and would increase costs tremendously.

What kind of railway could be built for the \$483,410,000 which would be the cost of the navigation project to the United States? If we take the extremely liberal estimate of a quarter of a million dollars per mile for lines, terminal facilities and equipment, a line of 1,033 miles from Chicago to Boston would cost about \$260,000,000 or \$223,410,000 less than the navigation project. The theoretical capacity during a year of 365 days would be about 130 million tons, or over three times that of the St. Lawrence waterway. In addition, this estimate of railway costs includes rolling stock and equipment, while the estimated cost of the waterway does not include ships. The direct cost of moving traffic by rail is only slightly more than by water and is very small in relation to capital investment.

The Effort to Incite Competition Contrary to Present Transportation Policy

Even if we grant that the waterway might compete effectively with the railroads, the expenditure of public moneys simply to provide private competition is based upon a monstrous fallacy. It is based upon the outworn dogma that competition will force prices down and benefit the consumer. We know today that no lasting profit to the nation as a whole can be derived from the duplication of services and the creation of surplus facilities, accompanied by the gross wastes of economic warfare. Increasing costs are not the road to cheaper services.

This new school of thought has become the accepted policy of our government. We are embarking upon the task of coordinating the railroads and stimulating consolidation along many lines. It would be a queer quirk of policy to sponsor the development of a competitive waterway at the same time that we are deprecating multiple services on the railroads.

If we desire to reduce railroad rates, the proper course is sound regulation of existing facilities; not the creation of excessive facilities that would cause all costs to rise. The justification for the St. Lawrence must be that it is fundamentally a more economical means of carrying goods than land transportation; not that it will bring in its wake the wasteful destruction of unnecessary competition in a public-utility field.

How cheap is waterway transportation?

The current belief that waterway transportation on the St. Lawrence would be incomparably cheaper than land traffic draws

strength from a primary mistake in estimating costs. Railroad rates have to cover the roadbed, the terminals, and all other incidents of capital outlay. Rates on waterways, however, cover only the cost to the carriers. To compare this cost with railway charges and to ignore the vast sums which the people of the United States as a whole spend for the construction and upkeep of the waterways themselves is a mistake so blatant that its frequency is almost inexplicable.

Quite aside from the oversight of waterway expenses that are borne by the general public, most comparisons between the immediate direct charges on railways and waterways have been glaringly inaccurate. The majority report of the Senate Committee on Foreign Relations states that freight can be transported 10 miles by water for every 1 mile by land. This claim is refuted by the very testimony upon which it is based. F. S. Keiser's figures, relied upon so heavily by the committee, give the waterway cost from Duluth to Montreal as 8.7 cents per bushel, and the all-rail rate from Duluth to New York, which is a longer distance, as 21.3 cents. The truth is, that the water rates on canals and rivers are generally only 10 to 20 per cent below those by rail. The water rates on low-grade traffic are 4 to 5 mills per ton-mile, compared with 6 or 7 mills by rail. The average rate for all-railway traffic is 10 to 11 mills.

Now let us examine more sober claims for the waterway. Mr. Ritter estimated in 1925 that there would be a saving of 8 cents to the shipper on every bushel of grain moving from the Great Lakes to Europe over the St. Lawrence waterway. In 1926 the Department of Commerce estimated that the saving to the shipper would be from 4.7 cents to 9.6 cents. The majority report of the Senate committee accepts without serious question the claim of an 8-cent saving, basing it largely upon the testimony of F. S. Keiser.

The 8-cent claim is not only absurd today; it was inaccurate when made. Mr. Ritter committed at least two grave errors in setting this figure. In the first place, he assumed that ocean liners could travel from Duluth to Montreal at approximately the same rate per mile that is in force between Montreal and Liverpool. This is far from the case because of all the factors that would tend to impede liner traffic above Montreal. Secondly, Mr. Ritter compared the estimated St. Lawrence waterway rate with the all-rail rates from interior points. It would be far more proper to compare the St. Lawrence rate with the rates from Duluth and Chicago down the Great Lakes to Buffalo and then by rail to New York, since that route is available already.

A far more satisfactory estimate can be made of the freight saving that might come to the shipper through the use of the St. Lawrence waterway during a period of normal price levels. During 1920-29, the average grain rate per bushel from Montreal to Europe was 9.5 cents. The water rate from Duluth to Buffalo was about 3 cents, and with the completion of the waterway, the route from Duluth to Montreal would be about 5 cents, as compared with 9 cents before improvement. This would give a total of 14½ cents from Duluth to Europe. The rate from Duluth to New York by the existing rail-and-water route was 11.1 cents, and the rate from New York to Liverpool during the navigable season on the St. Lawrence was 8 cents, totaling 19.1 cents. Thus the saving to the shipper due to improvement of the waterway would be about 4.5 cents per bushel. This estimate is in line with the Canadian studies which claimed a saving of only 5 cents per bushel. It is not contradicted by the patently sanguine estimate of the Department of Commerce, which merely set a range between 4.7 cents and 9.6 cents.

Even this saving to the shipper is predicated on the assumption that he would be the person benefited by lower rates. As a matter of fact, however, there is grave doubt as to whether the saving in transportation would be passed on to the American farmer. In this country competition is not very keenly adjusted to the price basis of the export market. More than 50 per cent of the freight saving would be absorbed by purchasers abroad. In addition, the wheat farmers outside the tributary areas would find their prices adversely affected by the new competitive conditions.

From May 29 to September 30, 1929, the railway rates on exportable wheat were lowered from 2 to 7 cents per bushel. This did not relieve the wheat congestion, stimulate export, nor avert the decline of wheat prices.

To make the most favorable case for the waterway, let us assume that the 5½ million tons of traffic which constitutes the sanest estimate of potential freight in normal times will be available when the waterway is completed. The project which would carry this tonnage would cost the American people \$30,170,500 annually for navigation alone. This means a cost of \$5.48 for every ton moved or about 15 cents for every bushel of wheat.

Should this expenditure be undertaken at a time when the saving to the American farmer would be 2 cents per bushel and when the saving even with the return to normal price levels would be only 4½ cents per bushel? Even if our foreign trade

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Motor Transport Section

Report Increasing Acceptance of Storedoor Service

Initial results of pick-up and delivery offer encouraging though not sensational, according to Pennsylvania, Erie and Grand Trunk Western

KEEN interest is being manifested throughout the country in the initial results of the provision of storedoor collection and delivery service for l.c.l. freight by railroads in Trunk Line territory. Has the inauguration of this type of service, already extensively in use in other parts of the United States but new to the greater part of the East, yet given any indication of its traffic-developing power and its ability to overcome truck competition?

Obviously, the service in the East is still too young to permit any except the most tentative conclusions to be reached. A period of less than two months is insufficient time for a fair test of the effectiveness of so radical a change in railway service as this. Nevertheless, the

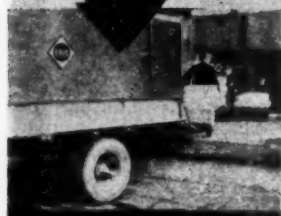
Pennsylvania, the Erie and the Grand Trunk Western, the pick-up and delivery tariffs of which went into effect on December 1, report that there is reason for encouragement even in the results secured up to this time.

Initial Results Satisfactory

Although no figures are available for publication, the Grand Trunk Western is satisfied with the results of the first month of operation of the service, and has experienced an increasing acceptance of the advantages of the pick-up and delivery tariff on the part of its shippers and consignees. Most of the l.c.l. freight handled under the tariff is moving within the 260-mile zone of free pick-up and delivery service, but there is a substantial



Pick Up at your door
Just phone your Erie agent—and on Erie trucks promptly call at your door to pick up the shipment.



Delivery to Rail Terminal
Erie truck loads your shipment to Erie's fast freight train.



Dependable Rail Transportation
Erie's fast freight trains speed your shipment to rail destination.

ERIE'S NEW STORE-DOOR SERVICE

for Collection and Delivery of Merchandise Freight



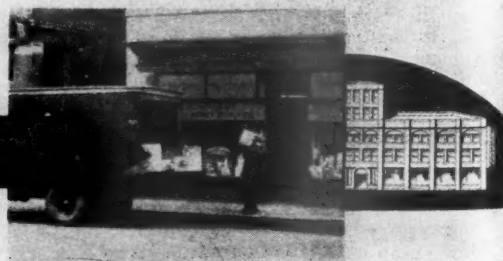
Your Telephone now brings Erie freight service right to your door

At all principal stations on its lines the Erie now provides coordinated rail-truck service for less than carload freight. Just phone your Erie agent . . . and Erie will handle the entire job, from your door to your consignee's. You have only ONE company to deal with . . . only ONE charge to pay.

Truck Pick-Up at Rail Terminal
Another Erie truck receives your shipment upon arrival at rail destination.



Delivery to Consignee
Your shipment is delivered direct to the consignee's door.



THE convenience and flexibility of truck pick-up plus the speed and dependability of shipping by rail, are now brought to you by this important innovation in Erie freight service. On any less-than-carload shipment a truck makes the pick-up at your door and transfers the freight to the railroad. At destination another truck takes it direct to your consignee. This means faster handling, savings in transportation costs, greater convenience and dependability for you. Following is a condensed chart showing charges. For further details, call your Erie agent.

SCHEDULE OF CHARGES

Miles	Collection or Delivery	Collection and Delivery	Minimum Rate	Minimum Charge
260 and less	Free	Free	35c per 100 lbs.	50c
261 to 319	1 to 3c	1 to 3c		
320 to 379	4c	4 to 11c		
380 and over	5c	12c		

For less carload freight to or from connecting lines on which the applicable class rate is 25c per 100 lbs. or higher, collection or delivery charge 5c per 100 pounds. Minimum 25c per collection or delivery.

The Erie's Folder Tells the Story of the New Service in Pictures as Well as in Words

amount of l.c.l. freight moving longer distances, on which additional charges for the pick-up and delivery service are assessed. This is especially true of freight moving into the larger terminals where even the maximum collection or delivery charge of 6 cents per 100 lb. is less, ordinarily, than the rate for which drayage service can be arranged for independently.

According to the Erie, the store-door collection and delivery service is proving very attractive to shippers of merchandise freight, as indicated by the results of the first month's operations. While the volume of freight reported as being handled under the tariff is still small, it is increasing in a satisfactory manner. The results are said to have been especially encouraging on the eastern portion of the Erie's lines where a larger number of cities of substantial size are served than is the case on the western portion of this railway. So far as Chicago is concerned, the free trap-car or trap-truck pick-up and delivery of shipments in amounts of 6,000 lb. or over, which has been in use for some time, is having some effect in keeping down the volume of freight handled under the new pick-up and delivery tariff.

Recovering Traffic from Trucks

Initial results of the provision of the new service by the Pennsylvania were referred to by Walter S. Franklin, vice-president in charge of traffic of the Pennsylvania, at the tenth annual meeting of the Atlantic States Shippers' Advisory Board in New York on January 4. At that time, Mr. Franklin said, "The service went into operation on December 1, and there has been too short a time, of course, for final conclusions. I can, however, give you the results so far. The response of our patrons has been most gratifying. Few things that the Pennsylvania has ever done have attracted more wide-spread attention and more favorable comments from shippers, newspapers and the general public.

"We are watching the growth of the service by means of daily reports of l.c.l. waybills from all stations on our lines. These reports show the total number of l.c.l. waybills, the number which call for collection and delivery and the percentage which these bear to the whole. In the first few days of the service, five to eight per cent of the l.c.l. waybills specified collection and delivery. This proportion has been constantly increasing, and it is now running about 20.5 per cent. From December 1, 1933, to January 2, 1934, inclusive, the last day for which reports have been received, the total of l.c.l. waybills was 293,603, of which 45,155, or over 15 per cent, were for collection and delivery. On December 1, 1933, there were 613 waybills that specified collection and delivery. During this period, the number grew to a maximum of 3,822 on January 2, 1934, an increase of 523.5 per cent.

"Frankly, this does not yet give a conclusive answer, but we do know many cases where shippers have returned to the railway traffic previously handled by trucks. A full and complete report is being compiled, as required by the Interstate Commerce Commission, which will show sufficient data to establish within the test period of a year whether the experiment is profitable or not. In the final analysis, to be satisfactory to shippers, consignees and carriers, the service must be economically sound and produce a net profit."

Some Tariff Features Need Changing

Features of the original pick-up and delivery tariffs which have tended to prevent use of the service by some shippers have been disclosed during the several weeks of experience with the tariffs. The limitation of free service to traffic moving 260 miles or less, and the imposition of extra charges for pick-up or delivery on l.c.l.

freight moving greater distances, is said to have exerted an unfavorable influence in some cases, leading shippers who might otherwise use the service to refrain from doing so. Another important factor which has kept down

Now the
Pennsylvania Railroad
Freight Service reaches from
your door
to
anyone's door

in 2000 other cities and towns—

ON DECEMBER 1, an epoch-making forward step is taken in Pennsylvania Railroad freight service. Heretofore, shippers have had to go to the railroad. Now the Pennsylvania Railroad goes to them.

Sending less-than-carload freight over the Pennsylvania becomes as easy as sending a letter by mail.

All you do is telephone your Pennsylvania freight agent. He assumes full charge of the whole job. A truck calls at your door—takes your shipment direct to the rail terminal, where it is loaded at once on an outgoing train. In the city of destination, another truck delivers it right to your consignee's door.

Throughout the job, you deal with just one agency—the Pennsylvania Railroad. You pay just one charge—the Railroad's bill. No more worry about collections—deliveries—extra charges. The Pennsylvania now does it all!



PICK-UP AT YOUR DOOR—and delivery at your consignee's—now make Pennsylvania freight service as convenient as shipping by truck—with the added dependability of the railroad.

The Pennsylvania provides trucks to collect and deliver your less-than-carload shipment here and in about 2,000 other cities and towns all over the Pennsylvania Railroad system.

Call your Pennsylvania freight agent and learn the details of this radically new service today.



TRUCK AND TRAIN now work together. For shippers this means better freight service. For the taxpayer, it means less congestion on the highways.

ALL YOU DO IS TELEPHONE—
PENNSYLVANIA RAILROAD DOES THE REST

One of the Advertisements in the Newspaper Campaign with which the Pennsylvania is Selling Its Pick-Up and Delivery Service

the volume of traffic moving under the tariffs has been the zones within industrial or switching localities where the pick-up and delivery service is available. For example, the pick-up and delivery service is available to

(Continued on page 81)

New Bill Would Regulate Bus and Truck Service

Need for control of highway freight transportation recognized in
H. R. 6836, introduced by Chairman Rayburn
of House commerce committee

Write Rayburn for copy of bill & hearing schedule also committee file

WITHOUT awaiting the recommendations of Co-ordinator Joseph B. Eastman concerning the requirements for the regulation of interstate motor coach and motor truck transportation, Chairman Rayburn of the Committee on Interstate and Foreign Commerce of the House of Representatives, on January 12 introduced in Congress a bill which would apply to both common and contract carriers by bus and truck the principal regulatory features which have been urged for a number of years. Hearings on the bill began on January 17. The new Rayburn bill, designated as H. R. 6836, is the result of a general agreement reached some-time ago by the railways, the state regulatory commissions, the electric railways and the American Highway Freight Association, formerly representative of common carrier truck operators. Introduction of the regulatory bill at this time, without waiting for the recommendations of Co-ordinator Eastman, which are not expected until late in the present session of Congress, is expected to increase substantially the chance for final passage of motor transport legislation prior to the adjournment of the present Congress.

An Advance Over Previous Bills

The new bill represents a marked advance over the similar bills which have preceded it. It is modeled after H. R. 10288 which was passed by the House of Representatives in the seventy-first Congress after extended hearings on it and on other bills to provide regulation for motor carriers. That bill, however, applied to motor coaches only, and it is understood that this was one of the objections which delayed its progress in the Senate, where it was favorably reported but did not come to a final vote. The new Rayburn bill, however, would apply the same regulatory measures to both buses and trucks.

In a statement accompanying the new bill, Mr. Rayburn said, "Since the passage of H. R. 10288, there has been a very great increase in freight transportation upon the highways, with a corresponding increase in the demand for regulation of freight truck operations. This comes from the public, from competing transportation agencies and from established responsible truck operators. This bill, accordingly, has been drawn to cover both passenger and freight carriers. All motor carriers engaged in operation across state boundaries, transporting either persons or property for compensation, are embraced within the regulation provided, except school and hotel buses, taxicabs, etc."

I. C. C. Would Be Regulatory Agency

The regulatory machinery provided by the bill is the same as that called for under H. R. 10288. The regulatory agency would be the Interstate Commerce Commission, which would utilize the state regulatory commissions or regulatory boards in the administration of

the Act. The commission would regulate both common carrier and contract carriers as to systems of accounts, records and reports, preservation of records, qualifications and maximum hours of service of employees, and safety of operation and equipment, and with respect to common carriers would also establish requirements as to continuous and adequate service and the transportation of baggage and express. The commission would also be empowered to investigate complaints alleging failure of any motor carrier to comply with the provisions of the law and to issue appropriate orders in such matters.

Section 3 (d) provides for the reference of matters arising under the Act to joint boards when the operations involved are in not more than three states, and gives the Interstate Commerce Commission authority, in its discretion, to refer cases involving more than three states to such joint boards. These joint boards would be nominated by state authorities and would be appointed by the Interstate Commerce Commission and subject to its approval. The joint boards would hold hearings upon matters referred to them and recommend decisions and orders, just as do examiners or members of the Interstate Commerce Commission. Any decision or order recommended by any such joint board would automatically become final, as a decision or order of the commission, if exception to it were not taken. In the latter event, it would be reviewed and finally passed upon by the commission. The commission would also be authorized to hold joint hearings with state authorities and to avail itself of the co-operation, services, records and facilities of the states. Any order of the commission would be subject to court review in the same manner as orders made under the Interstate Commerce Act. The commission would be given the same authority to proceed in the administration of the Act through bureaus and divisions as it has under the Interstate Commerce Act.

Bill Has "Grandfather Clause"

Certificates of public convenience and necessity would be made a prerequisite to the operation of a common carrier service either by motor bus or by motor truck. The bill has a "grandfather clause" under which bona fide common carrier operators in business on January 1, 1933, and qualified to render continuous and adequate service, would be granted certificates of convenience and necessity without further proceedings. No mention is made in the bill as to consideration to be given to existing transportation service in action by the commission upon applications for certificates.

Contract carriers, which are defined to embrace any motor carrier transporting passengers or freight for compensation, which is not a common carrier, would be required to secure a permit issued by the commission authorizing such operation. No showing of public convenience and necessity would be called for in the issu-

ance of these permits. The language of the bill with reference to the granting of permits reads, "A permit shall be issued to any qualified applicant therefor, authorizing in whole or in part the operations covered by the application, if it shall appear that the applicant is fit, willing and able properly to perform the service of a contract carrier by motor vehicle and to conform to the provisions of this Act and the lawful requirements, rules and regulations of the commission thereunder, and that the proposed operation, to the extent authorized by the permit, is not inconsistent with the public interest."

Rates of Common Carriers

Under Section 12, the rates of common carriers are required to be just, reasonable and non-discriminatory, making them subject to substantially the same regulation by the Interstate Commerce Commission as the rates of railways, except that the regulation would not extend to joint rates. In this respect, the bill goes farther than H. R. 10288. That bill would have given the commission power to adjudge a rate unlawful and to require it to be changed, but it would not have given the commission power to prescribe the rate thereafter to be enforced. The new bill would give complete power to the commission to prescribe exact minimum and maximum rates. Exception is made that the commission shall not be empowered to prescribe or in any manner to regulate rates for intrastate transportation or for any service connected therewith, for the purpose of removing discrimination against interstate commerce or for any other purpose. Common carriers would be required to adhere strictly to the rates published in their tariffs, and tariffs would not be permitted to be changed except after 30 days' notice, unless shorter notice were permitted by the commission.

Contract carriers would be required to file with the commission, and to publish, copies of their contracts containing the minimum charges and any rules or practices affecting these charges and the value of the service rendered under them. No reduction in charges would be permitted except after 30 days' notice of the proposed change, unless special authorization were granted by the commission. After hearing upon a complaint, or after an investigation on its own motion, the commission would be permitted to prescribe minimum charges for contract carriers if it should find that the charge complained against was too low in that it gave undue advantage to those served by the contract carrier as compared to the patrons of any common carrier, or by unfair competition unduly impaired the service or business of any common carrier in interstate commerce.

With respect to the rates of contract carriers, the new bill goes farther than H. R. 10288, which contained no similar provisions respecting the rates of "charter carriers." In connection with this section of his bill, Mr. Rayburn has said, "It is claimed that experience under state regulatory acts has proved that effective regulation of motor carriers is not possible when common carriers alone are regulated. Various states which originally provided for regulation of common carriers alone have amended their statutes to extend regulation to contract carriers, including the same degree of control over the rates of such carriers. In two cases arising under the Texas statute, which have been decided by the United States supreme court, such regulation of contract carriers has been sustained."

Some of the other provisions of the new bill are as follows: Section 8 forbids any person to engage in brokerage sale of passenger tickets of motor carriers except after obtaining a brokerage permit from the commission. This section subjects brokers to the jurisdiction of the

commission. This provision is designed to prevent serious abuses which have arisen in connection with the sale by irresponsible brokers of passenger tickets which are not thereafter honored according to the terms upon which they had been sold.

Section 11 empowers the commission to prescribe rules and regulations as to insurance, or other provisions for the purpose of securing the payment of judgments obtained for personal injuries or damage to property resulting from the operations of motor carriers. Provisions substantially similar to this were contained in H. R. 10288.

Consolidation Provision Changed

Section 10 subjects all consolidations, mergers and acquisitions of control to the approval of the commission. This section is identical with a corresponding section in H. R. 10288, with the exception of paragraph (c). In the earlier bill, paragraph (c) provided that no such transaction should be approved "if one or more of the corporations involved is engaged, directly or indirectly, in the transportation of persons by railroad." This paragraph was added as an amendment in the House of Representatives. The purpose of the author of the amendment was stated by him to be to prevent the consolidation of railroads otherwise than as provided by the Interstate Commerce Act. In the new bill, paragraph (c) reads, "No consolidation, merger or acquisition of control shall be approved under this section if it involves the consolidation or merger of two or more carriers by railroad or the acquisition of control of any carrier by railroad by another such carrier."

Section 17, providing penalties for violation of the Act and authorizing injunction to prevent violation, is substantially similar to the provisions of a corresponding section in H. R. 10288. There is one exception, however, and that provides penalties for the granting of rebates or concessions. By Section 19, the taxation and police powers of the states are expressly preserved. Transportation between points within the state, even though in part outside such state, would be subject to regulation by that state.

Report Increasing Acceptance of Storedoor Service

(Continued from page 79)

shippers and consignees within the city limits of Chicago but not beyond these limits. Thus the service has been withheld from shippers in such important sources of traffic outside the city limits as the Clearing district, Cicero and a number of suburban points of substantial size. An anomaly of the situation is that, due to the irregular nature of Chicago's city limits, pick-up and delivery service is withheld from some neighborhoods which are even closer to the railway freight stations than points within the city limits where the service is available. These handicaps are being watched carefully and the expectation is that steps will shortly be taken to remove them.

As stated by Mr. Franklin, "We make no claim that the details of the service, the precise zoning, or the schedules of 'plus' charges are perfect or final. We are constantly analyzing the results and are already applying modifications where they are needed. No doubt there will be modifications in details, but it seems to us highly probable that the principle of storedoor collection

and delivery is sound and is here to stay as a permanent feature of American railroad service."

New Service Extensively Advertised

All the lines which adopted pick-up and delivery service late last year have been concentrating their efforts upon the education of their patrons as to the nature and advantages of the service. It has been extensively advertised by all the roads. The Pennsylvania, in addition to an intensive campaign of personal solicitation, has mailed advertising folders describing the service to its patrons and, in addition, has made extraordinary use of both newspaper and magazine advertising. One of the original advertisements in the newspaper campaign is reproduced herewith.

The Erie, while not using newspaper advertising, has distributed large numbers of folders covering the service. In addition, it has inserted leaflets in all letters, notices, bills and other communications to shippers, these leaflets reading as follows:

Collection and Delivery Service

The Erie System Lines have established a new and improved method for handling l.c.l. freight direct to and from shippers' or consignees' places of business.

This railroad will, upon request, send its trucks to your door to collect or to deliver l.c.l. shipments routed over its lines to or from all points in the United States and Canada.

Try this complete service. You will find it convenient, prompt and economical.

Apply to your freight agent for full information as to rates, charges and service.

The two inside pages of the Erie's store-door collection and delivery folder are reproduced herewith. They explain in detail, and by means of pictures, just what the service means and how it works. Intensive personal solicitation of shippers and consignees by Erie traffic representatives began even before the service was inaugurated and has continued up to the present time. These campaigns of education of the railroad's patrons are bearing fruit, as indicated by the increase in the volume of traffic handled under the pick-up and delivery tariff from week to week.

Minority Report Opposes St. Lawrence Treaty

(Continued from page 77)

should expand beyond our wildest fancy at the present time and double the estimate of 5½ million tons, the cost to the American people would still be 7½ cents per bushel in order to effectuate a saving to the shipper of a far lesser amount. Hardly a more wasteful method of attempting to remove economic handicaps could be proposed by thoughtful people.

The St. Lawrence Treaty has been advocated as a splendid public-works project that will provide widespread relief to unemployment. I shall always support the idea of public construction. But the beauty of this idea is that while giving human relief it also favors worthwhile enterprise and increases the wealth of the nation. I am not for a public-works undertaking that is extravagant in conception and foredoomed to constitute an annual drain upon the resources of the country.

Public works are designed to prime the pump of business, not to compete with private industry. The very core of the St. Lawrence plan is the intent to face the railroads with competition, and thus to decrease activity in one industry as fast as it is created in another.

It has been demonstrated that waterway construction is one of the least successful methods of giving men jobs. It takes from two to four times as much money to keep a man employed for a year upon a river project as upon one of the many forms of useful work that have been undertaken by the Public Works Administration.

Odds and Ends . . .

Dancing Cars on Czech Railways

The Czech State railways, to encourage travel by rail, are introducing special coaches for dancers. Dance bands are provided and there is adequate dancing space and a buffet.

New Use for Old "Hacks"

The University of North Dakota has found a novel way to help students of more ambition than wealth. Half a dozen old railway cabooses have been turned into a dormitory unit and some 30 students are comfortably housed in them. The weekly rental paid by each of the students is four hours' work on the campus.

\$85,000 Worth of "Old-Fashioned Winter"

There may be those who actually long for a return of "old-fashioned winters," but officers of the Canadian National are not among them. The reason is largely a matter of dollars and cents. For example, in December, 1932, Canada had mild winter weather, so that it was unnecessary to operate even a single snow plow in the Maritime Provinces, and the only extra expense due to weather conditions was that required to pay for the shoveling out of a few switches that had been blocked by a little snow and ice. December, 1933, was quite different. That was an old-fashioned winter month. Snow plows on the Atlantic region of the Canadian National ran up 55,000 miles in order to keep the lines clear, and the cost of the job during the one month exceeded \$85,000.

More Railroad Felines

Rivalling in personal publicity the Lackawanna cat which broke into the front pages of New York newspapers about a year ago, after an informal ride on one of the car trucks of the Lackawanna Limited, are Mr. and Mrs. Robert Burns, champion rat eliminators in the Boston & Maine Hoosac elevator at Boston, Mass. Recognition of the prowess of these two cats was given recently by publication of an extensive story in the Boston Herald. No matter how many traps nor how much poison was used in the elevators, the rats appeared to thrive on them. As a last resort, the services of Mr. and Mrs. Burns were secured, and to good effect. In less than a month, several hundred rats had been killed and the rest had been driven away. In fact, the cats did such a good job that they were faced with famine until arrangements were made to supply them with other food. This costs money, to be sure, but only a small fraction of the amount of damage to grain which had been done by the rats prior to the employment of Mr. and Mrs. Burns.

Catch Pay Check Forgers

Thanks to the superior sleuthing of operatives of the Missouri-Kansas-Texas special service department, under Chief J. K. Ellis, the operations of a nation-wide check-forging ring were brought to a halt recently. The Katy detectives went into action shortly after 20 bogus Katy payroll checks had been issued and cashed at Oklahoma City, Okla., their efforts culminating in the arrest of three men and a woman at Kansas City, Mo. Although the forgeries were clumsily executed and the bogus checks had little resemblance to legitimate Katy checks, a number of merchants in Oklahoma City had been induced to cash them. The gang had operated in many parts of the country, making long jumps from one locality to another, usually by airplane, but they made their first false step when they went directly from one Katy city to another, enabling the special agents of the railway to pick up the trail in Oklahoma City and follow it quickly to its end in Kansas City. Two of the Katy officers involved in this case, Joe Palmer, special agent, and Ben Moore, special officer, at Oklahoma City, have other claims to fame also. They assisted some time ago in breaking up the Al Spencer gang of train robbers and in wiping out the Jimmy Keeton gang of box car thieves.

NEWS

Hearings Begun on Motor Bus and Truck Legislation

Rayburn bill taken up January 12 by House committee on interstate and foreign commerce

Without waiting for the forthcoming recommendations of Co-ordinator Eastman on legislation for the regulation of highway transportation, the House committee on interstate and foreign commerce on January 17 began a series of hearings on a bill, H.R.6836, introduced on January 12 by Chairman Rayburn of the committee providing for a system of regulation under the jurisdiction of the Interstate Commerce Commission. At the outset it became clear that proponents of the bill are to make a vigorous effort to overcome the theory advanced by some of the truck interests that such regulation of motor vehicle transportation as may be provided for under the proposed N. R. A. code, which has not yet been adopted, ought to be tried before there is any effort to attempt regulation through the commission. Fears had been expressed in some quarters that the idea might meet with the approval of Mr. Eastman, although it is understood that he has not yet completely formulated his recommendations on the subject.

At the opening of the hearing Chairman Rayburn made a statement saying that there was no occasion for surprise that he should have announced hearings at this time on a bill to regulate busses and trucks and that he had announced during the Fall that legislation for the regulation of these carriers would be considered at the earliest date consistent with the other duties of the committee. "Some contend," he added, "that because some bureau or sub-bureau of the National Recovery Administration is considering a code on busses and trucks Congress should not at this time consider this subject. It is not to interfere with any other department of the government but to assert the right and functions of Congress at all times that we are considering these bills. And I may say further that it is my definite opinion that laws for the regulation of the instrumentalities of interstate commerce are in the first instance and purely a congressional function."

Commissioner Frank B. McManamy, chairman of the legislative committee of the Interstate Commerce Commission, said the commission was preparing a report of a detailed study of the Rayburn bill and recalled that the commission has already taken the position that regulation of rates and safety of operation in highway trans-

portation is necessary. Kit F. Clardy, chairman of the Michigan Public Utilities Commission and of the legislative committee of the National Association of Railroad and Utilities Commissioners also presented a statement in support of the bill, taking the position that N. R. A. codes are but temporary and would in no way provide for adequate regulation.

The latest Rayburn bill, which was the subject of the hearing, is in the form approved by the state commissioners of a bill on which a general agreement was reached earlier in the year by representatives of the railroads, the state commissions, the electric railways, the bus operators and the American Highway Freight Association, which has since been superseded by the American Trucking Association which is opposed to regulation. It is understood that the bus association also now favors code regulation instead of regulation by commission. At the time of the general agreement the state commissions made one reservation as to the effect on intrastate rates of orders by the federal commission.

The President has not yet definitely decided whether to press for bus and truck legislation at this session, it was stated at the White House on Wednesday. He expects to discuss the whole transportation question some time next week with Co-ordinator Eastman who is not yet quite ready to report on the matter of highway transportation legislation. The President has had in mind ever since his Salt Lake City speech in September, 1932, the matter of trying to concentrate the control of all forms of transportation in a single body, probably the I. C. C.

I. C. C. Appropriation Passed by House

The House on January 12 passed the independent offices appropriation bill, without change in the amount proposed for the Interstate Commerce Commission, \$5,430,970 for the fiscal year 1935.

Advisory Committee of Executives Meets

At a meeting of the advisory committee of the Association of Railway Executives held in Washington on January 12 there was a general consideration of the legislative situation and of various other problems before the railroads, including the effect on railway operating and other expenses of the increased prices expected to result from the operation of N.R.A. codes on materials and supplies purchased by the railroads. Many of these codes have not yet been adopted but are in various stages of progress before the N.R.A.

Walker D. Hines, Former Director General, Dies

Succeeded William G. McAdoo in 1919 and served until the end of government operation

Walker D. Hines, former director general of railroads and at one time chairman of the board of directors of the Atchison, Topeka & Santa Fe, died on January 15 in a sanitarium at Merano, Italy. He was in his sixty-fourth year. Mr. Hines succeeded William G. McAdoo as director general of railroads and served in the position from January, 1919, until May, 1920, when the railways were returned by the government to their owners.

Born on February 2, 1870, at Russellville, Ky., Mr. Hines was educated at Ogden College and at the University of Virginia. From the latter he received his LL.B. degree in 1893 and in the same year



Walker D. Hines

entered the service of the Louisville & Nashville as assistant attorney. In 1897 he was promoted to assistant chief attorney and in 1901 he became first vice-president of the L. & N., serving in the latter position until 1904 when he resigned to enter the general practice of law at Louisville, Ky., as a partner in the firm of Humphrey, Hines & Humphrey. He returned again to railway service in 1906 when he became general counsel of the Atchison, Topeka & Santa Fe, a position which he retained until 1918, meanwhile (1906-1916) being also engaged in the general practice of law at New York and serving as chairman of the Santa Fe's executive committee. In 1916 he was elected

chairman of the board of directors of the Santa Fe, which position he held until 1918 when he was appointed assistant director general of railroads. He became director general in January, 1919, following Mr. McAdoo's resignation.

After completing his work with the railroad administration Mr. Hines was chosen by President Wilson as arbitrator of disputes arising over the allocation of shipping on the international rivers of Europe

as between the Allies and the Central powers. Returning to the United States he resumed the general practice of law in New York but in 1925 he was again in Europe making, for the League of Nations, a study of navigation on the Danube. He was elected president of the Cotton Textile Institute in 1926 and remained in that position until 1929 when he was elected chairman of the board. Just before his death Mr. Hines headed a group of eco-

nomics experts which since June, 1933, had been acting in an advisory capacity to the Turkish government. He was a director of the Chicago, Burlington & Quincy and the author of numerous pamphlets and articles on railroad problems, especially those connected with government regulation of railways. His book "War History of American Railroads," was published in 1928. Mr. Hines was buried in the American cemetery at Florence, Italy.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States *

Compiled from 149 Monthly Reports of Revenues and Expenses Representing 150 Class I Steam Railways

FOR THE MONTH OF NOVEMBER, 1933 AND 1932

Item	United States		Eastern District		Southern District		Western District	
	1933	1932	1933	1932	1933	1932	1933	1932
Average number of miles operated	240,187.71	241,622.55	59,345.47	59,692.69	45,612.25	45,958.61	135,229.99	135,971.25
Revenues:								
Freight	\$209,911,876	\$203,065,278	\$88,288,549	\$84,817,568	\$40,903,200	\$40,637,922	\$80,720,127	\$77,609,788
Passenger	24,972,237	24,859,073	15,200,869	15,281,605	3,060,963	2,669,776	6,710,405	6,907,692
Mail	7,669,429	7,722,682	2,975,962	3,032,050	1,334,176	1,325,313	3,359,291	3,365,319
Express	4,128,032	3,703,050	1,856,350	1,255,977	735,409	603,838	1,536,273	1,843,235
All other transportation	5,740,164	5,971,449	3,078,314	3,426,129	511,010	508,951	2,150,840	2,036,369
Incidental	4,659,123	4,888,066	2,641,539	2,848,268	691,590	698,915	1,325,994	1,340,883
Joint facility—Cr.	789,121	693,532	238,431	217,340	180,102	121,741	370,588	354,451
Joint facility—Dr.	194,301	159,369	41,036	34,367	19,776	18,845	133,489	106,157
Railway operating revenues	257,675,681	250,743,761	114,238,978	110,844,570	47,396,674	46,547,611	96,040,029	93,351,580
Expenses:								
Maintenance of way and structures	26,070,888	26,012,791	10,639,767	9,914,143	5,006,889	5,467,066	10,424,232	10,631,582
Maintenance of equipment	52,743,036	49,372,150	23,908,754	22,488,079	9,896,835	9,089,914	18,937,447	17,794,157
Traffic	7,204,901	7,356,126	2,738,262	2,744,008	1,323,997	1,324,731	3,142,642	3,287,387
Transportation	92,228,325	91,404,685	42,737,853	42,145,853	15,403,908	15,053,202	34,086,564	34,205,630
Miscellaneous operations	1,919,969	1,936,473	960,071	980,286	202,477	204,196	757,421	751,991
General	11,880,486	11,851,027	5,180,459	4,880,362	2,006,453	2,101,854	4,693,574	4,868,811
Transportation for investment—Cr.	223,122	237,386	84,928	80,469	22,898	19,509	115,296	137,408
Railway operating expenses	191,824,483	187,695,866	86,080,238	83,072,262	33,817,661	33,221,454	71,926,584	71,402,150
Net revenue from railway operations	65,851,198	63,047,895	28,158,740	27,772,308	13,579,013	13,326,157	24,113,445	21,949,430
Railway tax accruals	17,581,294	19,390,108	7,162,305	8,253,682	3,136,650	3,686,261	7,282,339	7,450,165
Uncollectible railway revenues	158,304	79,140	104,287	24,824	13,710	23,578	40,307	30,738
Railway operating income	48,111,600	43,578,647	20,892,148	19,493,802	10,428,653	9,616,318	16,790,799	14,468,527
Equipment rents—Dr. balance	7,420,386	7,144,180	3,904,256	4,097,676	218,263	d 19,925	3,297,867	3,066,429
Joint facility rent—Dr. balance	3,125,392	3,038,159	1,724,135	1,608,476	318,812	316,972	1,082,445	1,112,711
Net railway operating income	37,565,822	33,396,308	15,263,757	13,787,650	9,891,578	9,319,271	12,410,487	10,289,387
Ratio of expenses to revenues (per cent)....	74.44	74.86	75.35	74.94	71.35	71.37	74.89	76.49

FOR ELEVEN MONTHS ENDED WITH NOVEMBER, 1933 AND 1932

Average number of miles operated	240,824.53	241,703.24	59,457.35	59,719.63	45,744.43	46,072.85	135,622.75	135,910.76
Revenues:								
Freight	\$2,301,068,363	\$2,262,864,022	\$980,131,769	\$963,465,961	\$463,950,253	\$434,720,727	\$856,986,341	\$864,677,334
Passenger	300,030,198	346,892,567	179,446,363	207,296,824	35,180,323	39,167,668	85,403,512	100,428,075
Mail	82,489,786	87,480,076	32,345,025	34,632,322	14,201,557	14,791,075	35,943,201	38,056,679
Express	41,416,964	49,755,845	18,326,549	21,955,862	7,800,226	8,237,800	15,290,189	19,562,183
All other transportation	66,216,817	72,234,139	36,573,874	41,379,513	5,890,645	5,876,951	23,752,298	24,977,675
Incidental	53,275,704	58,495,607	29,515,898	33,758,633	7,580,122	7,791,287	16,179,684	16,945,687
Joint facility—Cr.	7,694,206	8,270,046	2,489,425	2,752,950	1,690,155	1,513,810	3,514,626	4,003,286
Joint facility—Dr.	2,075,396	2,449,785	572,209	675,933	209,862	204,054	1,293,325	1,569,798
Railway operating revenues	2,850,116,642	2,883,542,517	1,278,256,694	1,304,566,132	536,083,419	511,895,264	1,035,776,529	1,067,081,121
Expenses:								
Maintenance of way and structures	299,295,181	329,993,505	119,989,994	131,005,834	58,844,253	64,884,878	120,460,934	134,102,793
Maintenance of equipment	548,239,697	568,490,433	247,091,761	256,501,635	103,859,493	103,979,507	197,288,443	208,009,291
Traffic	78,535,540	88,916,561	29,371,839	33,973,795	14,844,106	16,450,848	34,319,595	38,491,918
Transportation	985,636,304	1,065,418,721	457,815,188	496,650,381	165,446,361	173,448,864	362,374,755	395,319,476
Miscellaneous operations	21,365,992	25,599,457	10,745,165	12,675,387	2,414,487	2,898,814	8,206,340	10,025,256
General	131,675,107	142,980,366	56,860,051	61,884,119	22,437,224	24,611,416	52,377,832	56,484,831
Transportation for investment—Cr.	2,510,438	3,895,131	883,586	1,361,517	291,861	280,090	1,334,991	2,253,524
Railway operating expenses	2,062,237,383	2,217,503,912	920,990,412	991,329,634	367,554,063	385,994,237	773,692,908	840,180,041
Net revenue from railway operations	787,879,259	666,038,605	357,266,282	313,236,498	168,529,356	125,901,027	262,083,621	226,901,080
Railway tax accruals	239,105,900	259,606,209	99,678,952	109,609,653	45,139,252	47,640,097	94,287,696	102,356,459
Uncollectible railway revenues	1,052,622	855,510	473,996	332,307	126,083	150,920	452,543	372,283
Railway operating income	547,720,737	405,576,886	257,113,334	203,294,538	123,264,021	78,110,010	167,343,382	124,172,338
Equipment rents—Dr. balance	78,334,712	78,900,779	40,447,362	39,853,788	3,978,916	3,187,841	33,908,434	35,859,150
Joint facility rent—Dr. balance	33,581,546	32,663,322	18,238,615	17,630,402	3,674,882	3,381,259	11,668,049	11,651,661
Net railway operating income	435,804,479	294,012,785	198,427,357	145,810,348	115,610,223	71,540,910	121,766,899	76,661,527
Ratio of expenses to revenues (per cent)....	72.36	76.90	72.05	75.99	68.56	75.40	74.70	78.74

* Excludes switching and terminal companies. Statements prior to January, 1933, included switching and terminal companies.
d Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Labor Opposition to Splawn Appointment Withdrawn

Opposition of the railroad labor organizations to the confirmation by the Senate of the President's appointment of Dr. W. M. W. Splawn as a member of the Interstate Commerce Commission was withdrawn at a hearing before the Senate committee on interstate commerce on January 16. J. A. Farquharson, legislative representative of the Brotherhood of Railroad Trainmen, appeared and explained that it had been decided to oppose the appointment because Dr. Splawn was one of the members of a board of arbitration that in 1927 supported a decision denying an increase in wages for conductors and trainmen in the West, but that at a meeting of the Railway Labor Executives' Association held in Washington on January 15 it was decided that it would be better to co-operate than to oppose. He said that



Underwood & Underwood
Dr. Walter M. W. Splawn

the only objection was based on the arbitration decision and that they realized that Dr. Splawn has the ability and training for the position. Because a large number of telegrams from members of the organizations, protesting against the appointment, had been received by members of the committee, it was decided to hold the hearing open until Thursday for any further witnesses and Dr. Splawn was questioned only very briefly. After outlining his experience in the teaching and study of transportation economics, as a member of the Texas railroad commission, and in connection with investigations conducted as special counsel of the House committee on interstate commerce, Dr. Splawn was asked his attitude toward labor organizations and regarding the Prince plan. He said he had absolute sympathy with the labor group and that he had been supported for the Texas commission in 1924 by the railroad labor group. He said the arbitration decision was based on a finding that the western trainmen were already receiving practically the same wage rates as the eastern men who had received a 7½ per cent increase. Regarding the Prince plan he said it seemed to him that so revolutionary a proposal, both economically and socially, would not be desirable and that

he thought the possible economies claimed for it had been over-estimated.

Dr. Splawn who on January 8 was nominated by President Roosevelt to the Senate for appointment as a member of the Interstate Commerce Commission, for a seven-year term, succeeding Ezra Brainerd, Jr., whose term expired at the end of the year, has served for several years as special counsel for the House committee on interstate and foreign commerce and in that connection has conducted for it several special investigations, including that on holding companies in the railroad field. In that position he had much to do with the drafting of the bill last Spring which resulted in the passage of the Emergency Transportation Act, 1933. He has for some time been considered an active candidate for appointment to the commission and, coming from Texas, his appointment carries out the precedent established in the Coolidge administration of giving representation to the Southwest. He has been a member of the Railroad Commission of Texas and is the author of books on railroad consolidation and government ownership of railroads.

Dr. Splawn was born at Arlington, Tex., June 16, 1883, and was educated at Decatur College, Baylor University, Yale University, the University of Chicago and Howard Payne College. After some years of experience in teaching and in a law office he became professor of economics at the University of Texas in 1919 and from 1924 to 1927 was president of that institution. In 1927 he served as chairman of a board of arbitration in a labor dispute between the western railways and their employees and then went to Washington as referee under the Settlement of War Claims Act. In 1929 he became dean of the graduate school of American University at Washington. Recently he has been vice-chairman and secretary of the special committee on transportation appointed to advise the President, of which Secretary Roper of the Department of Commerce is chairman.

Milwaukee and Northern Pacific to Use Joint Track

The Chicago, Milwaukee, St. Paul & Pacific and the Northern Pacific have entered into an agreement whereby both railroads will use the main line of the former from St. Regis, Mont., to Henderson, a distance of 16 miles.

Eastman Makes First Legislative Recommendations

The first of a series of recommendations for transportation legislation to be made by Joseph B. Eastman, federal co-ordinator of transportation, has been submitted by him to the Interstate Commerce Commission, which, under the terms of the emergency transportation act, is to transmit them with its own comments to the President and to Congress. The nature of the first recommendations was not made public. Co-ordinator Eastman is expected to make public shortly a report on the comprehensive investigation that has been conducted by his Section of Transportation which, it is understood, does not involve legislation.

C. L. Bardo Heads National Association of Manufacturers

Clinton L. Bardo, president of the New York Shipbuilding Company and formerly general manager of the New York, New Haven & Hartford, has been elected president of the National Association of Manufacturers, succeeding Robert L. Lund, who headed the association for two years; Mr. Lund was elected chairman of the board of the organization. Three new vice-presidents were chosen by the directorate as follows: George H. Houston, president of the Baldwin Locomotive Works, Philadelphia, Pa.; E. C. Heidrich, Jr., president of the Peoria Cordage Company, Peoria, Ill. and Charles R. Hook, president of the American Rolling Mills Company, Middletown, Ohio.

Clinton L. Bardo was born on October 24, 1867, and began railway work as a telegraph operator on the Philadelphia &



C. L. Bardo

Erie division of the Pennsylvania in May, 1885. He was in the service of the Pennsylvania for about a year and then for a brief period was with the Philadelphia & Reading, now the Reading Company, and the Tidewater Oil Company. In October, 1887, he went to the Lehigh Valley as telegraph operator and shortly after was promoted to train dispatcher. In 1892 he served as assistant trainmaster, then trainmaster and in 1901, was promoted to trainmaster on the New York division. Mr. Bardo in 1904 went to the New York, New Haven & Hartford as freight trainmaster at Harlem River, N. Y., becoming assistant superintendent of the division in 1905.

Two years afterwards he was appointed superintendent of the Grand Central Terminal, New York City and superintendent of the electric division of the New York Central, resigning in 1911 to return to the Lehigh Valley as assistant to the general manager. In February, 1913, he left that road to become general manager of the New York, New Haven & Hartford; in September, 1917, he was appointed assistant to the president, also remaining in general charge of the operating department. Mr. Bardo resigned from the New Haven service in June, 1925, and was elected vice-president of the American Brown, Boveri Electric Corporation, a subsidiary of Brown Boveri, Limited,

Baden, Switzerland. Since October, 1928, Mr. Bardo has been president of the New York Shipbuilding Company.

N. R. A. A. Abandons Exhibit

The National Railway Appliances Association has announced the abandonment for this year of the exhibit which it normally holds during the conventions of the American Railway Engineering Association and the Signal Section of the American Railway Association. This action was taken by reason of the curtailment of the A. R. E. A. convention to two days. In taking this action, the directors of the N. R. A. A. voted to hold an exhibition in Chicago on March 11-14, 1935, coincident with the conventions of the two engineering associations. The annual meeting of the N. R. A. A. will be held in the office of the association, 910 South Michigan avenue, Chicago, at 11 a. m., on Monday, March 12.

American Engineering Council Elects New Officers

John F. Coleman, consulting engineer of New Orleans, La., and past president of the American Society of Civil Engineers, was elected president and Frederick M. Feiker, formerly director of the U. S. Bureau of Foreign and Domestic Commerce, was appointed executive secretary of the American Engineering Council at the annual meeting held in Washington, D. C., January 11, 12 and 13. Mr. Coleman succeeds W. S. Lee of Charlotte, N. C.

Other officers, representing the several national and local engineering societies, were elected as follows. Vice-presidents of the Council—C. O. Bickelhaupt, vice-president of the American Telephone & Telegraph Company, New York, representing the American Institute of Electrical Engineers, Paul Doty, consulting engineer of St. Paul, Minn., representing the American Society of Mechanical Engineers, A. J. Hammond, consulting engineer of Chicago, representing the American Society of Civil Engineers, W. H. Woodbury, Duluth, Minn., representing the local engineering societies. C. E. Stephens of the American Institute of Electrical Engineers was elected treasurer and William McClellan, president of the Potomac Electric Power Company of Washington, was elected chairman of the finance committee.

Freight Traffic In November

Freight traffic handled by the Class I railroads in the first eleven months of 1933, measured in net ton-miles, showed an increase of 6.4 per cent above the same period in 1932, according to reports compiled by the Bureau of Railway Economics. Freight traffic in the eleven months period amounted to 253,080,741,000 net ton-miles, compared with 237,941,070,000 net ton-miles in the same period in 1932. Compared with the same period in 1931, however, freight traffic for the eleven months was a reduction of 64,405,243,000 net ton-miles or 20.3 per cent.

In the Eastern district, freight traffic handled was an increase of 7.4 per cent compared with the same period in 1932, while the Southern district reported an increase of 6.8 per cent, and the Western

district showed an increase of 4.7 per cent. Freight traffic in November, 1933, amounted to 23,935,630,000 net ton-miles, an increase of 2,176,158,000 net ton-miles or 10 per cent above the corresponding period in 1932, but a reduction of 1,148,677,000 net ton-miles, or 4.6 per cent, under the corresponding period in 1931.

Railroads in the Eastern district in November reported an increase of 7.7 per cent compared with the same month in 1932. The Southern district also reported an increase of 7.7 per cent and the Western district an increase of 14.2 per cent.

Eastern Executives Meet Again on Fare Cuts

Traffic officers of Eastern railroads have, during the past two weeks, been meeting again on the question of following the lead of Western and Southern roads in installing reductions in basic passenger rates. A new report of these traffic executives was considered at a meeting of the Eastern Presidents' Conference in New York on January 18. Whether or not any action would be taken could not be determined when this issue of the *Railway Age* went to press but it is understood that further sentiment in favor of a reduction in the East has developed since results of the Western and Southern experiments have become known. It is also understood, however, that some Eastern roads continue in opposition to taking action at this time.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to F. M. Spencer & Son, Topeka, Kan., for the construction of a passenger station for the Santa Fe at Oklahoma City, Okla. This project represents a further step in this railroad's plan for the elevation of its tracks through this city. The new station will be located on the west side of the tracks and will face on Santa Fe avenue where it intersects California avenue. It will be 127 ft. by 67 ft. in area and will be of brick and concrete construction faced with stone, with considerable ornamental aluminum on the exterior. A subway with stairways will provide access to two passenger platforms serving four of the elevated tracks. A baggage, mail and express building adjacent to the new station has been completed, part of which is in use as a passenger station during the construction of the new station. Present plans call for the completion of the new structure by July 31, 1934.

PUBLIC WORKS ADMINISTRATION.—The U. S. Engineer office at Kansas City, Mo., has awarded a contract to the Minneapolis Bridge Company, Minneapolis, Minn., for the construction of a bridge across the Milk river in Montana on the 14-mile line which the government is building from Wiota, Mont., on the Great Northern to the site of the Ft. Peck dam, a public works project. The cost of the bridge will be approximately \$56,000.

Equipment and Supplies

P. W. A. Loans to Railroads

The almost final procedural step necessary to assure the loan of \$77,000,000 from the Public Works Administration to the Pennsylvania for completion of its electrification work and the building and purchase of 7,000 freight cars and 101 electric locomotives was taken this week when the Interstate Commerce Commission on January 15 gave its necessary approval of the expenditures to be made with the proceeds of the loan. The company's application for a loan of \$84,000,000 was filed on November 2 and an allotment of that amount was made by the Special Board for Public Works the same day, but the contracts with the P. W. A. in connection with the loan were not signed until December 29, when the amount was reduced to \$77,000,000, and the application for the commission's approval was filed on January 3.

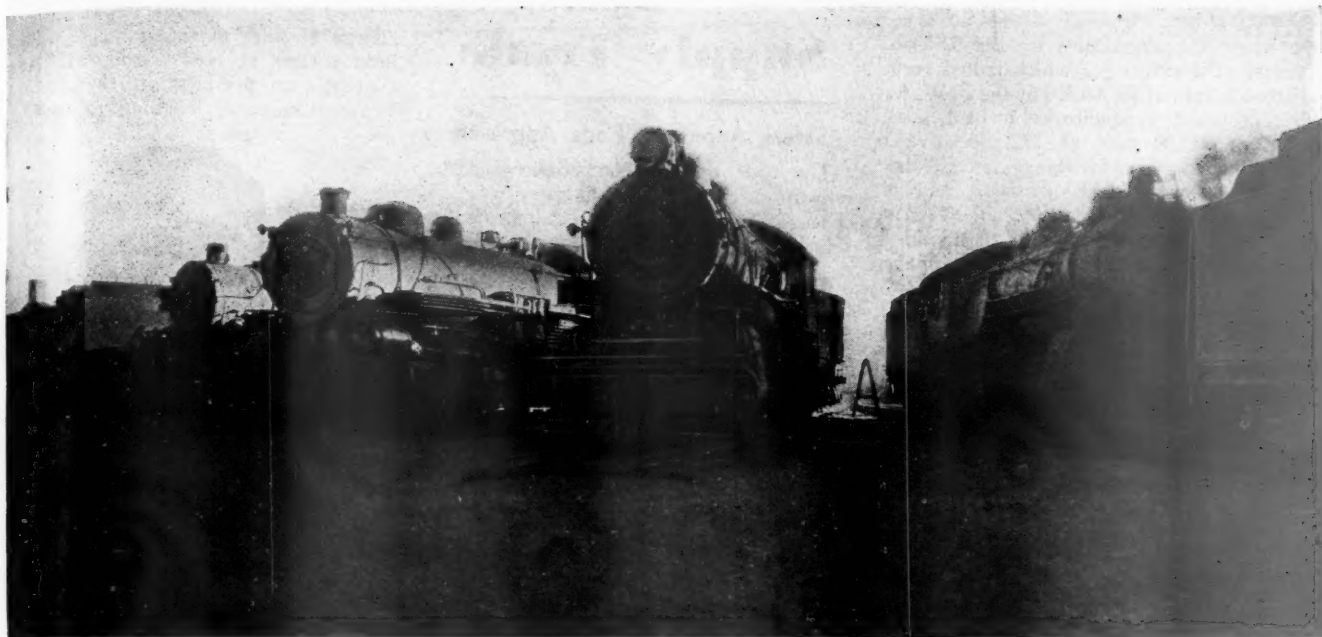
The commission has still to pass upon the Pennsylvania's application for authority to issue and sell to the United States government \$45,000,000 of 30-year secured 4 per cent serial bonds to cover the electrification work and \$32,000,000 of equipment trust certificates for the cars and locomotives. These are to be issued in installments from time to time as the work progresses and funds are advanced.

An allotment of \$2,000,000 for a loan to the New York, New Haven & Hartford, to be used for the purchase of 50 new passenger cars, was announced on January 15 by Public Works Administrator Harold L. Ickes. This allotment will create 1,710,000 man-hours of direct employment in the shops where the coaches are to be built. Work will get under way in March, according to the application. A previous allotment of \$3,500,000 to the New Haven was made to enable that company to reemploy 700 men in its Readville, Mass., and Van Nest, N. Y., shops at repairing and rebuilding locomotives, cars and other equipment.

Allotment of \$540,000 for loans to two railroad companies was announced on January 11, the Lehigh Valley was allotted \$500,000 to be used for the purchase of five new locomotives, the manufacture of which will create 112,000 man-hours of direct employment, and the Midland Continental, a short line in the Northwest with main offices at Jamestown, N. D., was allotted \$40,000 to be used for the purchase of one new locomotive. The new locomotive will cost \$55,000, and the company will furnish from other sources the \$15,000 difference. This allotment will create 23,800 man-hours of direct employment.

The Interstate Commerce Commission on January 10 approved, on the application of the Kansas, Oklahoma & Gulf, the expenditure of \$290,834 for the purchase and installation of 5,184 tons of 110-pound rail and necessary fastenings, to be financed by a loan for which an allotment had been made by the P. W. A.

The commission on January 12 approved



OLD POWER IS A DRAG ON RECOVERY

The large number of obsolete locomotives that now burden the railroads is a handicap to the recovery of earning power. ● Increasing traffic is drawing back into service locomotives that are 15 to 20 years old with a consequent decrease in present efficiency. ● Modern power would speed recovery and increase profits.



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the proposed expenditure by the Illinois Central of amounts for which it had been allotted a loan of \$9,300,000 by the P. W. A. The proposed expenditures include purchase of 21,600 tons of 112-pound rail, with the necessary fastenings, frogs, and switches, about 65,000 cross-ties, and a small amount of signal material, \$1,437,145; heavy general repairs to 16,015 miscellaneous freight cars at an approximate cost of \$6,210,555; general repairs to 228 passenger cars at an approximate cost of \$1,100,300; a new bridge at Big Clifty, Ky., \$167,000; renewal of approach spans of the bridge at Cairo, Ill., \$870,000; and relining of the tunnel near Reevesville, Ill., \$215,000.

The Southern Pacific has applied to the Interstate Commerce Commission for approval of the expenditure of \$12,970,735 to be financed with a loan of \$12,000,000 allotted by the P. W. A. to be used as follows: For the installation of 1,820,000 ties, \$2,414,500; for the purchase and laying of 40,000 tons of new rail plus some rail on hand and the necessary fastenings, \$3,051,785; for bridges, trestles, and culverts, \$1,305,700; for classified repairs to locomotives, \$3,609,300; for freight car repairs, \$1,523,500; for passenger car repairs, \$1,065,950.

It is understood that many railroads that have been negotiating with the P.W.A. for loans have been delayed in the completion of their plans because of the difficulty in obtaining definite price quotation pending the adoption of the manufacturers' codes. However, it is expected that the codes for the locomotive and car manufacturers will be approved at an early date.

LOCOMOTIVES

LEHIGH VALLEY.—The P.W.A. has allotted an additional \$500,000 to this road for the purchase of five new locomotives.

MIDLAND CONTINENTAL.—This company has been allotted \$40,000 by the P.W.A. for the purchase of one Diesel locomotive.

PASSENGER CARS

THE NEW YORK, NEW HAVEN & HARTFORD has been allotted \$2,000,000 additional by the P.W.A. for the purchase of 50 passenger cars. The company is now asking for bids for this equipment and for a streamlined train.

IRON AND STEEL

THE CHICAGO & NORTH WESTERN has ordered 170 tons of structural steel for bridge work on the Iowa division from the McClintic-Marshall Corporation.

MISCELLANEOUS

THE LOUISVILLE & NASHVILLE, on January 16, recalled 800 men to work at its shops at Louisville, Ky.

Supply Trade

Safety Appliance Code Approved

The code of fair competition for the railway safety appliance industry was approved on January 12 by Administrator Johnson of the N. R. A.

The Hess - Bright Manufacturing Company will be discontinued and all future trading will be done in the name of **SKF Industries, Inc.**, Philadelphia, Pa.

W. H. Tucker, who has been acting manager of the New York territory of the **Vapor Car Heating Company, Inc.**, has been appointed eastern manager, with headquarters at 75 West street, New York.

Ross F. Hayes, railway supplies, 50 Church street, New York, has again become associated with **E. I. du Pont de Nemours & Company**, Fabrikoid division, as eastern sales agent for its Fabrikoid products in the railway and transportation field.

S. M. D. Clapper has been elected president of the **General Refractories Company**, Philadelphia, Pa., succeeding **John R. Sproul**, who has resigned. Mr. Clapper had been chairman of the board of the company, which post is now vacated. Mr. Sproul also resigned as a director of the company and was appointed assistant to the president.

The Inland Steel Company, Chicago, has appointed **Joseph T. Ryerson & Son, Inc.**, Chicago, its exclusive selling agents for steel sheet piling in Ohio, West Virginia, Pennsylvania, New York, New Jersey, Maryland, Delaware, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, Maine, Kentucky and the District of Columbia.

A merger of the **Ambler Asbestos Shingle & Sheathing Company** with the **Keasbey & Mattison Company**, both of Ambler, Pa., and the acquisition of a controlling interest in the latter company by **Turner & Newall, Ltd.**, of Great Britain, has been announced by A. S. Blagden, president of the American companies. The enlarged business will retain the name of **Keasbey & Mattison Company**.

Lucian C. Brown, vice-president in charge of sales of the **Elwell-Parker Electric Company**, Cleveland, Ohio, has resigned effective February 1. Mr. Brown was born on August 16, 1879, at Avon, Ohio, and was educated at the Ohio State University, Columbus, Ohio. He began work about 1902 with the Morgan Engineering Company at Alliance, Ohio. He subsequently served as general superintendent of the Rarieg Engineering Company, Columbus, and then as erecting superintendent of the Nova Scotia Iron & Steel Company, Sidney Mines, N. S. Mr. Brown then went with the Ralston Steel Car Company, and later served as vice-president in charge of sales of that company. About 25 years ago he went with the Elwell-Parker Electric Company, and since that time served as vice-president in

charge of sales of that company with his headquarters at New York. Mr. Brown continues as president of the Lucian C. Brown Company, handling railroad sup-



Lucian C. Brown

plies. He was a pioneer in conjunction with his brother, George W. Brown of Chicago, in introducing the industrial storage battery truck now in general use on railroads and in industrial plants.

E. J. Stocking, sales manager of the **Hobbs-Western Company**, with headquarters at St. Louis, Mo., has been pro-

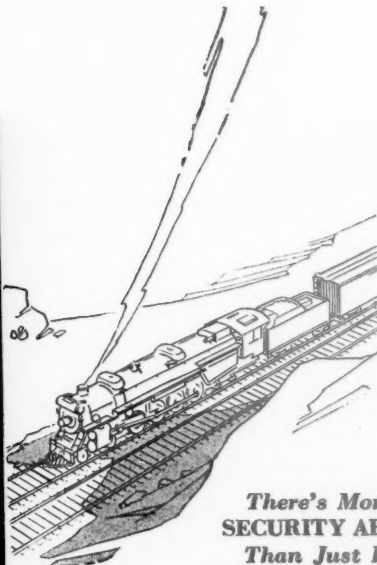


E. J. Stocking

moted to vice-president in charge of sales. Mr. Stocking was born in Bowling Green, Ohio, in 1877 and entered railway service as a messenger boy for the Toledo & Ohio Central (now a part of the New York Central) in 1893. In 1904, he entered the traffic department of the Chicago & Eastern Illinois and two years later became chief traffic clerk for the Chicago & Alton. In the following year he was appointed assistant general freight agent of the Chicago, Peoria & St. Louis, which position he held until 1909, when he became traffic manager of the Kettle River Treating Company. Later he was placed in charge of tie and timber sales. In 1912, he handled commercial sales for the Creosote Wood Paving Block Association and in 1915, became sales manager of the Chicago Creosoting Company. When this company was absorbed by the Central Creosoting Company in 1916, he became vice-president. In 1925, Mr. Stocking was

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appointed secretary of the American Wood-Preservers' Association, with headquarters at Chicago. In 1927, he became general sales manager of the Western Tie & Timber Company and the Kettle River Treating Company. When these companies and the Hobbs Tie & Lumber Company were consolidated in 1930 to form the Hobbs-Western Company, he was appointed sales manager of the consolidated organization, the position he was holding at the time of his recent appointment. Mr. Stocking has been active in association work, having served as president of the American Wood-Preservers' Association in 1924, and being vice-president of the National Association of Railroad Tie Producers at the present time. Recently he has also been the representative of the crosstie producers in negotiations leading to the inclusion of the crosstie industry as a self-governing division under the lumber code.

Bethlehem Steel Company Executives

F. A. Shick, who has been appointed vice-president and controller of the Bethlehem Steel Company, with headquarters at Bethlehem, Pa., as was announced in the *Railway Age* of January 13, has been in the service of the company since 1906, when he joined that organization as auditor. He then served as controller of the Bethlehem Steel Corporation and its subsidiary companies since 1907. He is also a director of the Bethlehem Steel Corporation. He has made many contributions to modern corporate accounting and is an important contributor to efficient statistical and accounting practices in the steel industry.

J. M. Larkin, who has been appointed vice-president in charge of industrial and public relations of the Bethlehem Steel Company, began work 30 years ago as a draftsman. He has been advanced through various operating divisions of the company having in the past handled the development of the Bethlehem labor relations and associated industrial questions. In 1918, he was appointed assistant to president and in

years. When the National Share-the-Work movement was started, he organized the National Corporations division under Walter C. Teagle.

C. R. Holton, who has been appointed vice-president in charge of purchases of



Underwood & Underwood

J. M. Larkin

the Bethlehem Steel Company, has been in the steel industry nearly 33 years and with Bethlehem or companies acquired by it since 1906. Mr. Holton joined the pur-



McCaa Studio

C. R. Holton

chasing department of the company in 1916, and the following year was appointed assistant purchasing agent, becoming purchasing agent in 1920, and a director of the company in 1925. In his new position as vice-president in charge of purchases he will be in charge of purchasing for all Bethlehem companies.

Fred M. Fuller, assistant general manager of sales of the American Sheet & Tin Plate Company, subsidiary of United States Steel Corporation, has been appointed general manager of sales—

J. I. Andrews continuing as vice-president in charge of sales. George G. McGlaughlin, assistant manager of sales in the Cincinnati, Ohio, office, has been appointed assistant general manager of sales in Pittsburgh, Pa., succeeding Mr. Fuller; W. Arch Irvin, assistant to vice-president, has been transferred from the operating to the sales department and Walter C. Carroll, of the general sales office in Pittsburgh, has been appointed manager



Underwood & Underwood

F. A. Shick

that position had charge of the administration of various activities designed to benefit employees. He has also been a director of the company for a number of

of sales in the New York office, succeeding A. J. Thomas, transferred.

OBITUARY

J. P. Bourke, vice-president of the Ewald Iron Company, Inc., at New York, died suddenly of a heart attack on January 17, at his home in Larchmont, N. Y.

Giuseppe Faccioli, former works engineer and associate manager of the Pittsfield, Mass., works of the General Electric Company, died in Pittsfield on January 13, about four years after his retirement because of ill health.

William Bancroft Potter, for many years engineer of the General Electric Company's railway department, died on January 15 at his home in Schenectady, N. Y. Mr. Potter had retired in September, 1930, after 43 years of service with the General Electric and the Thomson-Houston Electric Company, one of its predecessors. He was born on February 19, 1863, at Thomaston, Conn. He served an apprenticeship with several engineering companies until the summer of 1887, when he entered the employ of the Thomson-Houston Electric Company at its plant at Lynn, Mass. After a period of shop training he entered field service. In the early years of his career as an electrical engineer he devised a practical type of street-car control apparatus, known as the series-parallel controller, which was immediately marketed by General Electric and was widely installed. This embodied underlying principles since employed in most street-car control systems. In 1894, Mr. Potter went to Schenectady and the following year was appointed engineer of the railway department. In this capacity he was associated with the electrification of a large number of railway projects including the Manhattan Elevated Railway, New York, the Grand Central Terminal, New York, the Great Northern, the Detroit tunnel, the Butte, Anaconda & Pacific and the Chicago, Milwaukee, St. Paul & Pa-




William Bancroft Potter

cific. Mr. Potter held 130 patents for various inventions, most of them related to electric traction work. Shortly after 1900 he collaborated with others on early types of gasoline electric rail cars for railroad use, and was also associated with the first high voltage interurban railway work in Pennsylvania.

These Units Are

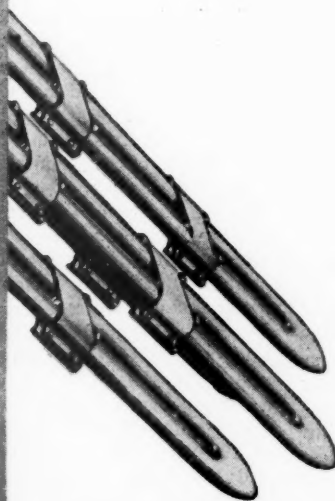
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Financial

CHESAPEAKE & OHIO.—To Meet Note Maturity.—This company will meet in cash a maturity of \$3,950,000 of 6 per cent notes which fall due January 31.

CHICAGO, MILWAUKEE & ST. PAUL.—Final Valuation.—The Interstate Commerce Commission has issued a final valuation report as of 1918 finding the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$584,903,500 as of that date.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Abandonment.—The Interstate Commerce Commission has authorized this company to abandon its line between Ayres, Wis., and Ebner, 8.6 miles, and to operate between those points over the Chicago, Burlington & Quincy.

ILLINOIS CENTRAL. R.F.C. Loan Reduced.—The Interstate Commerce Commission, Division 4, has issued a modification of its previous report in which it had approved a loan of \$11,000,000 to this company from the Reconstruction Finance Corporation, to reduce the amount to \$6,296,333. The report says the applicant, by practicing economies during 1932 and 1933 and by obtaining a loan of \$3,000,000 from the Railroad Credit Corporation has found it unnecessary to obtain further funds from the R.F.C., which had advanced it \$6,346,333 of which \$50,000 has been repaid.

OHIO & MORENCI.—Stock.—The Interstate Commerce Commission has authorized this company to issue 288 shares of capital stock without par value to be delivered to the Joseph Schonthal Company in satisfaction of an agreed price of \$28,250 to be paid for a line of railroad formerly owned by the Toledo & Western in Lucas and Fulton Counties, Ohio, and Lewance County, Mich., together with a 20-ton gasoline locomotive.

PACIFIC COAST.—R. F. C. Loan.—This company has applied to the Reconstruction Finance Corporation for a loan of \$70,000 to fight floods and repair damage caused by floods.

ST. LOUIS-SAN FRANCISCO.—Abandonment.—The Interstate Commerce Commission has authorized the trustees to abandon parts of the Deering branch, from Wardell, Mo., to Fraily, 4.5 miles, and from Yukon, Mo., to Deering Junction, 4 miles, and part of the Tipperary branch, from McDougal, Ark., to Tipperary, 8.9 miles.

ST. LOUIS SOUTHWESTERN.—Bonds.—The Interstate Commerce Commission has authorized this company to pledge with the Railroad Credit Corporation its equity in not exceeding \$23,903,000 of its general and refunding mortgage bonds, series A, and \$474,000 of Southern Illinois & Missouri Bridge 4 per cent mortgage bonds held as collateral security by the Reconstruction Finance Corporation. The equity pledge will secure a loan of \$1,727,525 from the Railroad Credit Corporation.

SOUTHERN PACIFIC.—Abandonment.—The Interstate Commerce Commission has authorized the abandonment of 4.087 miles of branch line between Alamitos, Calif., and New Almaden, and between Le Franc, Calif., and Almaden Junction, 4.360 miles.

Average Prices of Stocks and of Bonds

	Jan. 16	Last week	Last year
Average price of 20 representative railway stocks.	44.02	39.10	25.05
Average price of 20 representative railway bonds.	72.47	69.58	58.03

Dividends Declared

Alabama Great Southern.—Preferred, 3 per cent, payable February 27 to holders of record January 22.
 Albany & Susquehanna.—Special, \$1.50, payable January 30 to holders of record January 15.
 Northern R. R. of N. H.—\$1.50, quarterly, payable January 31 to holders of record January 5.
 United New Jersey R. R. & Canal.—\$2.50, quarterly, payable April 10 to holders of record March 20.
 Virginian.—Preferred, \$1.50, quarterly, payable February 1 to holders of record January 20.

Railway Officers

EXECUTIVE

Frank H. Ford has been appointed assistant to the president of the Kansas City Southern, with headquarters at Shreveport, La., in which position he will perform such duties as may be assigned to him by the president.

TRAFFIC

R. F. Smith, who has been appointed general traffic manager of the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, as noted in the *Railway Age* of January 6, has been in railroad service for 29 years. He was born on August 9, 1887, at Milford Haven, South Wales, and first entered railway service in this country in 1903 as a clerk in the local freight station of the W. & L. E. at Toledo, Ohio. There years later Mr. Smith went with the Wabash Pittsburgh Terminal (then a subsidiary of the Wabash and now part of the W. & L. E.) as a clerk in the freight station at Pittsburgh, being promoted to cashier in the following year. Following a short period of service with the Wabash Mr. Smith returned to the W. & L. E. in 1908 as chief clerk to the general coal and ore agent at Cleveland, Ohio, being appointed a freight traffic representative with the same headquarters in 1910. In 1912 he was advanced to general agent at Cleveland and four years later he was appointed chief clerk to the receiver and general manager. Mr. Smith left railway service in 1917 to become traffic manager of the Cambridge Collieries Company at Cleveland, returning to the W. & L. E. in 1924 as superintendent at Toledo, Ohio. In 1926 he was made general freight agent at Cleveland, which position he held until his recent promotion to general traffic manager.

William E. Carbone, whose appointment as general western passenger agent of the Delaware, Lackawanna & Western, with headquarters at Chicago, was an-



William E. Carbone

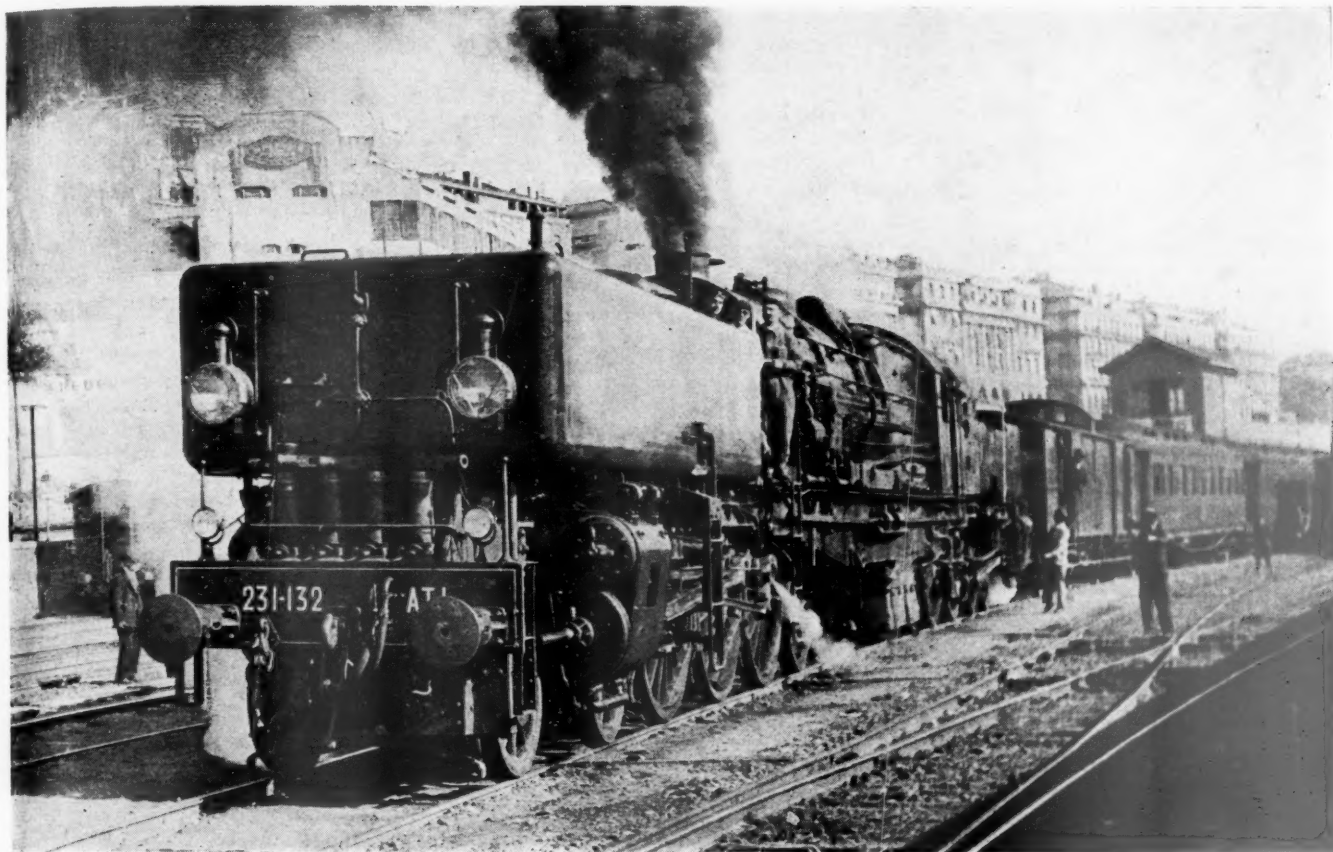
nounced in the *Railway Age* of December 30, 1933, assumed his new duties on January 1. A sketch of Mr. Carbone's career appeared in the *Railway Age* of January 6, page 30.

George Zabriskie, representative in the freight department of the Wabash at New York, has been appointed general eastern agent of the Pittsburgh & West Virginia, with headquarters in the Chrysler building, New York. Mr. Zabriskie was born on August 28, 1890, at Tacoma, Wash. He attended the grammar schools at Tacoma and Bellingham, Wash., Trinity School, New York, and Massachusetts State College, Amherst, Mass., from which latter institution he was graduated in 1913 with a B. Sc. degree. He entered railway service in February, 1914, as yard clerk



George Zabriskie

for the New York, New Haven & Hartford at Harlem River, N. Y., in which position he served until 1915. After spending two years in other business, Mr. Zabriskie re-entered railway service with the Grand Trunk Pacific in the local freight office at Winnipeg as clerk, and subsequently served as train agent for the same road. Leaving the latter position to serve in the U. S. Army, Mr. Zabriskie in January, 1919, returned again to the Grand Trunk Pacific as train agent. From



High-speed Beyer-Garratt Locomotive With Which Tests Were Carried Out in France and Algeria

AMERICAN LOCOMOTIVE COMPANY

TESTS covering 15,000 miles in France and Algeria on the P. L. M. System, with maximum speed of 82 m. p. h., the highest speed yet obtained by any articulated steam locomotive in the world, demonstrated conclusively the peculiar fitness of this type of locomotive for heavy fast service.

The characteristics of this type of machine are high tractive effort at starting, rapid acceleration and powerful braking, high sustained power and good riding qualities.

The American Locomotive Company has secured the sole and exclusive right to manufacture and sell this type of equipment in the United States and Canada.

30 CHURCH STREET NEW YORK N.Y.

May, 1919, until November, 1919, he was traffic manager for the Prince Rupert Dry Dock & Engineering Co., Prince Rupert, B. C. In 1920, he became traffic agent for the Chicago Great Western at New York and in 1924 he became associated with the Wabash as representative in the freight department in New York.

FINANCIAL, LEGAL AND ACCOUNTING

Charles A. Helsell, district attorney for the Illinois Central, with headquarters at Ft. Dodge, Ia., has been promoted to general attorney, with headquarters at Chicago, succeeding **J. Carter Fort**.

J. Carter Fort, general attorney of the Illinois Central, has been appointed general solicitor of the Association of Railway Executives, with office at Washington, D. C., succeeding **Alfred P. Thom, Jr.**, who has been appointed assistant to the general counsel, **R. V. Fletcher**. **Stanley J. Strong**, secretary and treasurer of the association, has been appointed also office manager.

G. W. Loderhose, who has been appointed freight claim agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, as noted in the *Railway Age* of January 6, has been in railway service for 34 years. He was born on February 1, 1885, at Chicago and first entered railway service on January 1, 1900, as a clerk on the Chicago, Rock



G. W. Loderhose

Island & Pacific. After serving in various capacities for the next 16 years, Mr. Loderhose was appointed assistant general superintendent of freight claims, which position he held until August, 1918, when he left the Rock Island to go with the Milwaukee as assistant freight claim agent. He held the latter position continuously until his appointment as freight claim agent on January 1.

ENGINEERING AND SIGNALING

Augustine L. Lee, whose appointment as chief engineer of the Union Railroad at East Pittsburgh, Pa., was reported in the *Railway Age* of January 6, was born

at Richmond, Va., on February 6, 1875. He was educated in the public schools of Pittsburgh and studied civil engineering under the tutorship of his father who was a graduate engineer of the South Carolina Military College and of the Polytechnic de École of Paris. In 1890 Mr. Lee entered the employ of the Homestead Steel Works



A. L. Lee

and seven years later he became draughtsman for the Pittsburgh Bridge Co. When this firm was absorbed by the United States Steel Corporation in 1900, Mr. Lee became assistant manager of the Pittsburgh plant of the American Bridge Company. In 1906 he was appointed assistant engineer for the same company at its Ambridge plant. He served in this capacity until 1917 when he entered the United States Army, serving as major of engineers until July, 1919, at which time he returned to the American Bridge Company as assistant engineer. From 1922 to 1924, he served as resident engineer of the U. S. S. Products Company in India, returning to the American Bridge Company on the latter date. Mr. Lee has been in charge of bridges for the Union Railroad since 1910. He was the engineer in charge of the re-construction of the Monongahela river bridge of this railroad at Port Perry, Pa., in 1927. He was appointed acting bridge engineer for the railroad in June, 1932, in which position he served until his recent appointment.

OPERATING

G. J. Shreeve, superintendent on the Belt Railway of Chicago, has been appointed general superintendent of transportation of this company and the Chicago & Western Indiana with headquarters at Chicago. **W. L. Fox**, trainmaster on the Belt Railway, succeeds Mr. Shreeve as superintendent at Clearing, Ill.

OBITUARY

J. O. Goodsell, general agent, passenger department, for the Union Pacific at Omaha, Neb., died on January 13 of amoebic dysentery. Mr. Goodsell was 60 years of age and had been connected with the Union Pacific for 43 years.

Edwin T. Dakin, general auditor of the Northern Pacific, with headquarters

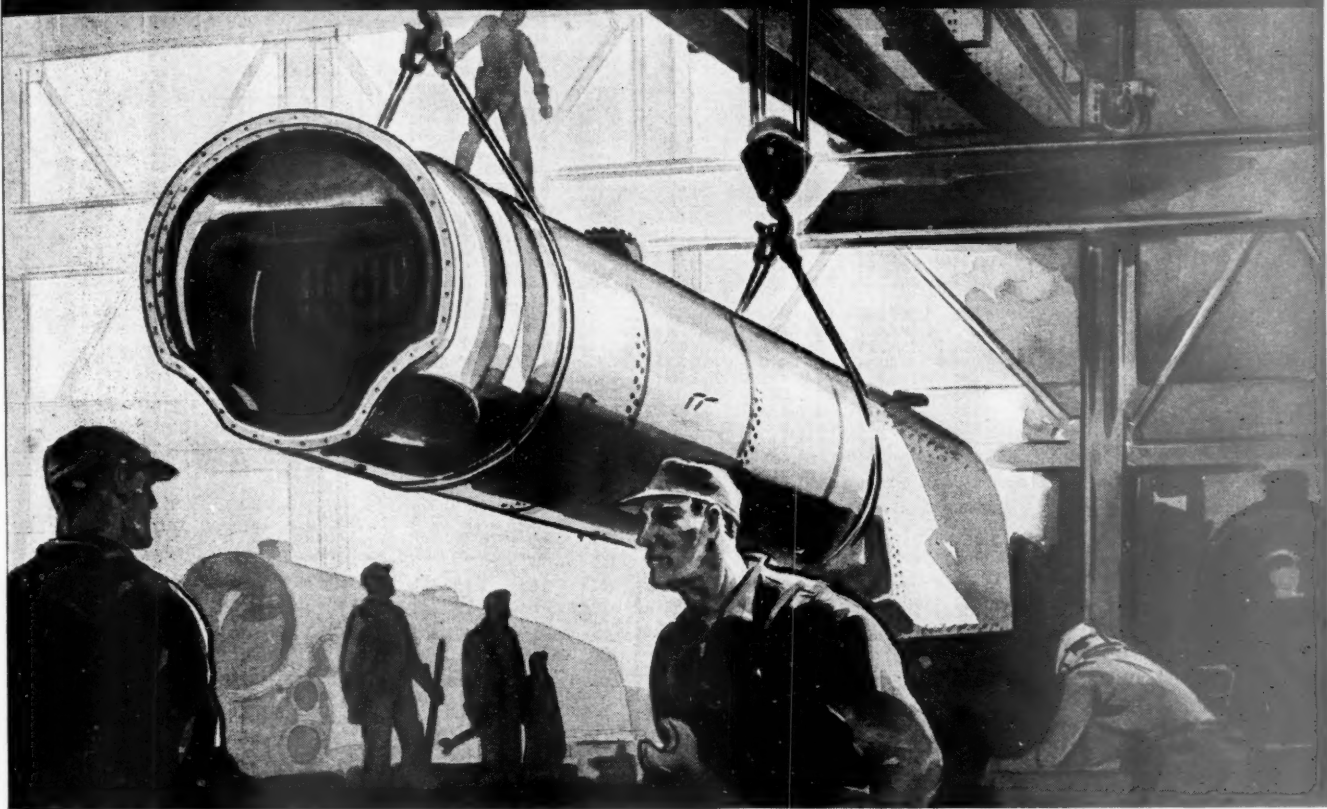
at St. Paul, Minn., died suddenly at his home in that city on January 13. Mr. Dakin was born on May 6, 1878, at Cambridge, Mass., and before joining the Northern Pacific in July, 1918, he served as a clerk on the Illinois Central, as auditor for the Tennessee, Kentucky & Northern, and as assistant chief examiner of accounts for the Interstate Commerce Commission. Throughout his service with the Northern Pacific Mr. Dakin held the position of general auditor.

Alexander G. Armstrong, superintendent of shops for the Coast Lines of the Atchison, Topeka & Santa Fe, at San Bernardino, Cal., died on January 12. Mr. Armstrong was born on November 4, 1872, in Michigan and first entered railway service as an apprentice on the Northern Pacific, where he later served as a machinist and as a material inspector. In 1903 he went to the Santa Fe at Topeka, Kan., as an inspector for the Baldwin Locomotive Works, later being appointed a foreman in the Santa Fe's shops at San Bernardino. In 1911 he was promoted to division foreman at Los Angeles, Cal., and in 1913 he was advanced to master mechanic at Needles, Cal. Subsequently Mr. Armstrong was transferred to San Bernardino where he was appointed superintendent of shops in March, 1918.

R. D. Ross, superintendent of the Nashville division of the Louisville & Nashville, with headquarters at Nashville, Tenn., died on December 9 at Cincinnati, Ohio. Mr. Ross was born on July 10, 1883, at Eldorado, Ill., and entered the service of the L. & N. on April 21, 1899, as a record clerk at Cincinnati. In 1904, he was promoted to freight cashier at the same point, which position he held until 1920 when he was made freight agent at the West End station in Cincinnati. After about two years Mr. Ross was transferred to Birmingham, Ala., and on December 15, 1925, he was promoted to assistant superintendent at Cincinnati, being further advanced to superintendent of the terminal at that point in January, 1927. In June, 1932, he was transferred to the Nashville division, where he remained until his death.

Ernest O. Saltmarsh, assistant to the general manager of the Louisville & Nashville, with headquarters at Pensacola, Fla., died on December 16 at Quantico, Fla., at the age of 86 years. Mr. Saltmarsh served as superintendent on the L. & N. at Pensacola continuously for 48 years. He was born on December 15, 1848, at Windsor, Vt., and received his higher education at Massachusetts Institute of Technology, graduating in 1869. He entered railway service with the L. & N. in 1870 as an assistant engineer, serving in this capacity and as assistant to superintendent until 1880, when he was made superintendent of the Owensboro & Nashville (now part of the L. & N.) In 1881 Mr. Saltmarsh was appointed a superintendent on the L. & N. and served in this position at Pensacola until April, 1929, when ill health forced him to relinquish his duties as superintendent and he was appointed assistant to the general manager.

BETTER MATERIALS MAKE POSSIBLE HIGHER BOILER CAPACITY



Locomotives have practically reached the weight limits of roadbed and structures. « « «

To increase boiler capacity, obtain greater tractive effort and still keep within weight restrictions, is the aim of designers today. « « « Agathon Alloy Steels are a valuable aid. They provide the essential higher strength, shock-resistance and anti-fatigue qualities in smaller-section, lighter-weight forgings. Savings of several tons of weight per locomotive are possible. « « « Whatever the weight-saving, it can be put into the boiler to increase its capacity and provide greater tractive effort—without exceeding weight limits. « « «

Give careful consideration to Agathon Alloy Steels and their weight-saving possibilities on new power. Use them for replacements on existing locomotives, too! Here they assure greater forging dependability and safeguard operation. « « « « « « « «

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

REPUBLIC STEEL
C O R P O R A T I O N
GENERAL OFFICES  YOUNGSTOWN, OHIO




Operating Statistics of Large Steam Railways—Selected Items for the Month of November, 1933,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross Excluding locomotives and tenders	Net Revenue and non-revenue	Serv-ice-able	Un-serv-ice-able	Per cent un-serv-ice-able	Stored	
New England Region:													
Boston & Albany.....	1933	402	127,283	131,815	8,556	3,115	66.7	162,890	54,838	64	40	38.6	18
	1932	402	114,609	119,206	7,449	2,905	67.2	150,810	51,038	61	51	45.3	10
Boston & Maine.....	1933	2,052	260,565	297,541	27,976	8,534	65.5	483,074	175,602	135	153	53.1	13
	1932	2,057	247,485	277,443	24,271	7,889	65.9	434,348	156,432	134	153	53.4	28
N. Y., New H. & Hartf.....	1933	2,044	324,243	396,906	21,323	10,447	65.0	573,516	212,725	207	156	42.9	21
	1932	2,043	317,954	381,899	19,004	9,520	64.6	516,889	188,446	214	139	39.5	11
Great Lakes Region:													
Delaware & Hudson.....	1933	848	211,074	281,203	31,943	6,834	60.8	438,742	201,626	247	29	10.4	141
	1932	848	196,102	257,304	25,627	5,961	59.4	382,891	171,634	255	26	9.3	158
Del., Lack. & Western.....	1933	998	343,147	379,383	48,188	10,585	65.0	622,221	243,560	192	64	25.1	51
	1932	998	313,995	345,005	43,274	9,914	65.6	567,807	220,080	203	66	24.4	62
Erie (incl. Chi. & Erie)....	1933	2,316	645,409	670,289	58,732	25,444	61.4	1,581,779	586,870	313	178	36.2	88
	1932	2,316	605,227	634,586	40,799	23,309	60.1	1,479,090	548,537	318	175	35.5	100
Grand Trunk Western.....	1933	1,008	193,342	194,063	1,393	4,299	60.8	260,050	89,626	74	74	50.3	2
	1932	1,023	169,807	171,288	1,590	3,868	59.3	237,361	81,233	92	64	41.3	27
Lehigh Valley.....	1933	1,335	379,026	397,826	38,774	10,839	62.2	677,548	273,841	170	149	46.7	9
	1932	1,343	336,621	352,770	32,359	9,906	63.4	604,004	242,942	188	130	40.9	25
Michigan Central.....	1933	1,957	329,694	330,726	12,160	9,938	60.7	587,935	198,718	132	55	29.4	34
	1932	2,039	335,023	335,159	8,912	9,240	59.0	559,002	187,222	119	82	40.9	28
New York Central.....	1933	6,411	1,427,808	1,529,451	105,173	50,023	58.5	3,225,609	1,306,238	561	612	52.2	21
	1932	6,388	1,401,875	1,492,643	102,721	47,117	58.0	3,062,332	1,237,781	587	655	52.7	35
New York, Chi. & St. L.....	1933	1,660	469,669	485,192	4,943	13,298	60.0	803,589	280,074	132	63	32.4	16
	1932	1,661	416,334	428,193	4,621	11,803	61.1	689,310	236,223	127	115	47.5	31
Pere Marquette.....	1933	2,254	298,968	308,865	2,801	6,389	57.2	428,527	164,953	116	56	32.5	22
	1932	2,286	283,065	295,104	3,013	5,850	56.3	402,354	158,249	130	46	26.1	23
Pitts. & Lake Erie.....	1933	229	68,672	70,329	1,281	2,494	54.5	212,486	114,505	29	41	59.0	2
	1932	235	56,874	58,030	1,761	2,323	56.4	201,783	112,422	29	56	66.2	4
Wabash.....	1933	2,445	505,761	512,057	9,976	14,358	61.9	850,841	259,851	168	172	50.5	60
	1932	2,497	466,825	475,909	9,981	13,395	62.8	766,212	248,634	185	179	49.2	29
Central Eastern Region:													
Baltimore & Ohio.....	1933	6,282	1,309,640	1,597,482	176,680	36,497	57.8	2,584,519	1,138,687	709	614	46.4	87
	1932	6,277	1,247,647	1,464,452	144,559	33,046	57.8	2,286,305	979,941	759	591	43.8	178
Big Four Lines.....	1933	2,655	553,571	566,273	20,462	15,516	60.4	991,868	427,250	231	163	41.4	20
	1932	2,664	556,994	572,410	16,275	14,839	59.4	990,576	446,218	259	176	40.5	11
Central of New Jersey.....	1933	692	134,217	149,495	25,797	4,187	55.9	296,997	136,840	104	68	39.8	41
	1932	692	131,933	143,244	23,018	3,999	55.6	282,772	129,759	114	64	35.8	57
Chicago & Eastern Ill.....	1933	939	175,310	175,623	2,773	3,623	59.1	251,469	108,817	61	110	64.4	14
	1932	939	172,657	173,165	2,975	3,266	59.5	225,590	98,661	74	91	55.2	30
Elgin, Joliet & Eastern.....	1933	446	75,331	76,339	1,413	1,524	56.3	124,360	59,308	67	22	24.6	16
	1932	447	60,225	61,121	1,253	1,282	55.2	106,817	51,237	78	12	13.6	37
Long Island.....	1933	396	29,459	30,346	13,709	289	53.0	21,924	8,716	35	22	38.6	8
	1932	396	32,353	33,363	13,706	313	50.4	24,179	8,830	35	13	28.1	8
Pennsylvania System.....	1933	10,082	2,521,000	2,810,526	295,471	85,311	61.4	5,730,573	2,516,714	1,510	918	37.8	368
	1932	10,528	2,433,952	2,721,821	261,505	76,995	58.9	5,273,249	2,242,972	1,882	632	25.1	799
Reading.....	1933	1,454	387,151	420,566	42,427	10,259	57.5	762,557	359,036	255	117	31.6	81
	1932	1,454	364,792	398,804	38,970	9,565	57.1	707,427	330,982	282	109	27.9	109
Pocahontas Region:													
Chesapeake & Ohio.....	1933	3,122	790,957	838,514	35,543	33,174	54.8	2,851,510	1,531,011	462	212	31.5	137
	1932	3,136	792,905	832,261	27,556	31,943	53.1	2,826,018	1,518,196	517	158	23.4	203
Norfolk & Western.....	1933	2,163	533,707	553,267	24,207	19,214	58.4	1,614,737	844,047	412	56	12.0	178
	1932	2,224	549,054	570,887	27,756	20,088	56.9	1,692,533	880,162	418	61	12.7	170
Southern Region:													
Atlantic Coast Line.....	1933	5,144	521,125	523,274	6,176	10,111	60.2	558,291	190,840	356	126	26.1	125
	1932	5,144	482,785	483,279	6,910	9,036	61.1	484,946	161,372	375	96	20.4	141
Central of Georgia.....	1933	1,904	195,493	196,321	3,347	4,066	68.7	217,200	80,464	104	38	26.6	2
	1932	1,900	188,041	189,660	2,721	3,745	68.2	221,364	76,938	88	55	38.2	2
Ill. Cent. (incl. Y. & M. V.).....	1933	6,640	1,273,419	1,285,793	21,962	27,975	57.2	1,917,328	765,131	593	337	36.3	6
	1932	6,658	1,257,681	1,271,183	20,917	27,358	57.7	1,881,084	763,229	653	280	30.0	21
Louisville & Nashville.....	1933	5,112	882,714	946,305	26,303	18,946	58.3	1,336,996	629,586	326	311	48.9	23
	1932	5,177	875,865	937,384	25,554	17,899	56.9	1,285,277	601,696	368	342	48.1	96
Seaboard Air Line.....	1933	4,298	429,110	434,960	4,113	10,018	64.9	579,244	212,849	219	70	24.2	25
	1932	4,376	409,019	417,416	3,246	8,904	61.5	519,303	177,835	243	48	16.5	57
Southern.....	1933	6,602	1,035,107	1,050,481	16,887	22,630	63.8	1,281,322	477,688	684	230	25.1	173
	1932	6,656	1,015,420	1,027,143	17,094	21,802	63.1	1,227,224	444,688	735	218	22.9	253
Northwestern Region:													
Chi. & North Western.....	1933	8,425	914,780	966,019	22,839	21,933	62.5	1,351,289	460,613	578	236	28.9	148
	1932	8,443	828,248	870,336	20,487	19,283	62.1	1,152,606	385,418	605	221	26.7	232
Chicago Great Western.....	1933	1,463	215,830	217,328	19,892	6,173	56.0	399,184	132,308	64	35	35.4	2
	1932	1,463	194,790	195,979	16,509	5,600	57.7	351,709	120,933	68	44	39.2	7
Chi., Milw., St. P. & Pac.....	1933	11,195	1,114,052	1,170,711	48,311	27,706	59.4	1,778,855	703,875	574	306	34.8	209
	1932	11,234	1,069,035	1,128,332	48,295	25,598	61.5	1,599,472	641,561	746	164	18.1	360
Chi., St. P., Minneap. & Om.....	1933	1,653	192,840	199,856	8,627	3,838	64.3	233,844	97,366	124	33	21.2	58
	1932	1,714	202,161	207,364	8,532	3,662	64.4	220,522	85,681	144	26	15.4	77
Great Northern.....	1933	8,424	633,937	639,712	20,160	18,601	65.8	1,148,962	485,652	465	153	24.7	111
	1932	8,430	585,147	588,453	14,716	15,656	67.7	932,718	392,745	490	115	19.0	143
Minneap., St. P. & S. St.....	1933	4,281	316,711	322,079	1,576	6,156	64.0	352,134	140,232	125	39	23.9	11
	1932	4,325	337,320	340,398	794	6,204	65.9	347,099	142,979	145	53	26.9	13
Northern Pacific.....	1933	6,412	532,467										

Compared with November, 1932, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road and year	Average number of freight cars on line			Per cent un-servicable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per live-day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1933	3,656	3,349	7,005	28.4	21,765	1,280	431	17.6	261	22.2	4,550	160	45.2
.....1932	4,624	2,840	7,464	35.7	21,181	1,316	445	17.6	228	19.3	4,235	166	37.7
Boston & Maine.....1933	10,311	7,366	17,677	22.5	26,415	1,854	674	20.6	331	24.6	2,853	110	37.7
.....1932	11,034	6,829	17,863	20.3	23,496	1,734	623	19.8	288	22.0	2,499	112	35.1
N. Y., New H. & Hartf.....1933	15,816	10,021	25,837	11.7	25,949	1,769	656	20.4	274	20.7	3,469	115	38.5
.....1932	16,721	9,661	26,382	9.6	24,184	1,626	593	19.8	238	18.6	3,075	120	37.9
Great Lakes Region:													
Delaware & Hudson.....1933	11,128	2,641	13,769	4.4	26,072	2,079	955	29.5	488	27.2	7,924	119	37.8
.....1932	11,756	2,148	13,904	4.1	26,033	1,953	875	28.8	411	24.1	6,746	123	33.6
Del., Lack. & Western.....1933	17,444	4,615	22,059	12.8	26,363	1,813	710	23.0	368	24.6	8,134	154	55.7
.....1932	18,656	3,878	22,534	11.0	25,876	1,808	701	22.2	326	22.4	7,350	149	48.1
Erie (incl. Chi. & Erie).....1933	33,002	11,760	44,762	4.9	38,889	2,451	909	23.1	437	30.9	8,446	110	49.5
.....1932	36,117	11,115	47,232	5.7	37,755	2,444	906	23.5	387	27.4	7,895	109	45.7
Grand Trunk Western.....1933	6,113	7,570	13,683	20.7	24,847	1,345	464	20.8	218	17.2	2,963	125	44.1
.....1932	5,491	7,575	13,066	14.8	23,303	1,398	478	21.0	207	16.6	2,647	118	37.0
Lehigh Valley.....1933	18,205	5,359	23,564	18.7	31,052	1,788	722	25.3	387	24.6	6,836	147	45.5
.....1932	19,394	4,846	24,240	19.2	29,996	1,794	722	24.5	334	21.5	6,029	150	40.4
Michigan Central.....1933	21,478	17,181	38,659	14.1	32,524	1,783	603	20.0	171	14.1	3,384	121	61.1
.....1932	24,105	16,562	40,667	10.1	29,081	1,669	559	20.3	153	12.8	3,061	137	57.1
New York Central.....1933	66,802	59,229	126,031	23.0	35,121	2,259	915	26.1	345	22.6	6,791	110	46.5
.....1932	83,296	55,580	138,876	22.6	33,503	2,184	883	26.3	297	19.5	6,459	109	42.8
New York, Chi. & St. L.....1933	9,733	6,066	15,439	6.0	30,341	1,711	596	21.1	605	47.8	5,623	113	83.6
.....1932	15,658	6,179	21,837	14.4	28,896	1,656	567	20.0	361	29.5	4,742	109	59.7
Pere Marquette.....1933	13,725	4,665	18,390	3.0	24,230	1,433	552	25.8	299	20.3	2,439	103	60.5
.....1932	14,117	4,616	18,733	2.8	23,502	1,421	559	27.1	282	18.5	2,307	104	56.3
Pitts. & Lake Erie.....1933	14,439	10,643	25,082	32.0	45,239	3,094	1,667	45.9	152	6.1	16,643	110	34.0
.....1932	17,408	6,970	24,378	26.7	51,279	3,548	1,977	48.4	154	5.6	15,934	114	23.6
Wabash.....1933	15,476	8,384	23,860	3.6	33,847	1,682	514	18.1	363	32.4	3,543	125	51.2
.....1932	19,531	7,405	26,936	9.4	32,837	1,641	533	18.6	308	26.4	3,320	120	44.5
Central Eastern Region:													
Baltimore & Ohio.....1933	84,997	18,851	103,848	20.3	25,453	1,973	869	31.2	365	20.3	6,041	163	44.7
.....1932	97,202	16,818	114,020	13.5	24,145	1,832	785	29.7	286	16.7	5,204	156	39.7
Big Four Lines.....1933	18,497	21,876	40,373	15.5	31,251	1,792	772	27.5	353	21.2	5,365	124	49.6
.....1932	22,136	18,776	40,912	17.5	30,906	1,778	801	30.1	364	20.4	5,584	121	45.1
Central of New Jersey.....1933	16,951	6,771	23,722	32.1	26,841	2,213	1,020	32.7	192	10.5	6,592	149	34.0
.....1932	17,838	6,333	24,171	20.7	27,903	2,143	984	32.4	179	9.9	6,251	137	31.1
Chicago & Eastern Ill.....1933	5,943	2,528	8,471	21.8	25,243	1,434	621	30.0	428	24.1	3,863	129	34.7
.....1932	6,091	1,933	8,024	18.1	22,130	1,307	571	30.2	410	22.8	3,503	139	35.7
Elgin, Joliet & Eastern.....1933	9,615	4,064	13,679	18.5	14,794	1,651	787	38.9	145	6.6	4,432	132	29.1
.....1932	9,802	3,783	13,585	12.7	15,596	1,774	851	40.0	126	5.7	3,820	136	23.1
Long Island.....1933	775	3,394	4,169	1.9	5,922	744	296	30.2	70	4.4	733	308	25.7
.....1932	793	3,541	4,334	1.2	5,656	747	273	28.2	68	4.8	743	319	32.7
Pennsylvania System.....1933	243,008	45,500	288,508	12.2	32,581	2,273	998	29.5	291	16.1	8,321	133	42.6
.....1932	248,419	47,034	295,453	8.7	30,576	2,167	922	29.1	253	14.7	7,102	135	39.5
Reading.....1933	36,371	7,944	44,315	19.8	24,397	1,970	927	35.0	270	13.4	8,234	158	41.5
.....1932	39,172	7,537	46,709	14.4	22,620	1,939	907	34.6	236	12.0	7,590	156	37.3
Pocahontas Region:													
Chesapeake & Ohio.....1933	46,070	8,929	54,999	1.9	48,775	3,605	1,936	46.2	928	36.7	16,346	84	43.2
.....1932	44,361	8,870	53,231	1.6	48,863	3,564	1,915	47.5	951	37.6	16,139	81	42.5
Norfolk & Western.....1933	39,901	4,041	43,942	3.5	44,792	3,026	1,581	43.9	640	24.9	13,009	117	41.1
.....1932	38,248	4,165	42,413	3.6	44,671	3,083	1,603	43.8	692	27.7	13,192	114	41.6
Southern Region:													
Atlantic Coast Line.....1933	27,146	5,046	32,192	26.3	18,807	1,071	366	18.9	198	17.4	1,237	123	36.6
.....1932	28,852	4,845	33,697	15.9	17,924	1,004	334	17.9	160	14.6	1,046	131	34.7
Central of Georgia.....1933	7,364	1,953	9,317	26.4	19,965	1,111	412	19.7	288	21.1	1,409	136	47.0
.....1932	7,155	1,758	8,913	26.1	21,214	1,177	409	20.5	288	20.5	1,350	127	44.8
Ill. Cent. (incl. Y. & M. V.).....1933	53,120	13,459	66,579	33.6	24,280	1,506	601	27.4	383	24.5	3,841	146	46.9
.....1932	53,538	13,302	66,840	21.9	23,891	1,496	607	27.9	381	23.6	3,821	148	46.2
Louisville & Nashville.....1933	48,848	6,294	55,142	27.1	22,613	1,515	713	33.2	381	19.7	4,105	148	50.9
.....1932	52,044	5,882	57,926	23.3	22,112	1,467	687	33.6	346	18.1	3,874	150	45.2
Seaboard Air Line.....1933	13,279	4,294	17,573	10.0	21,747	1,350	496	21.2	404	29.3	1,651	125	50.6
.....1932	15,752	4,315	20,067	13.8	20,205	1,270	435	20.0	295	24.1	1,354	133	48.1
Southern.....1933	32,043	17,292	49,335	21.7	20,327	1,238	461	21.1	323	23.9	2,412	158	38.9
.....1932	42,097	22,001	64,098	15.4	19,834	1,209	438	20.4	231	18.0	2,227	155	36.5
Northwestern Region:													
Chi. & North Western.....1933	44,807	18,108	62,915	10.2	22,928	1,477	504	21.0	244	18.6	1,822	136	40.5
.....1932	46,101	19,933	66,034	8.8	21,231	1,392	465	20.0	195	15.7	1,522	135	35.9
Chicago Great Western.....1933	3,175	2,920	6,095	6.3	33,667	1,850	613	21.4	724	60.2	3,014	147	79.7
.....1932	5,061	2,713	7,774	14.7	31,748	1,806	621	21.6	519	41.6	2,755	146	63.6
Chi., Milw., St. P. & Pac.....1933	58,999	13,842	72,841	4.6	24,845	1,597	632	25.4	322	21.3	2,096	130	46.2
.....1932	62,054	13,349	75,403	3.2	23,111	1,496	600	25.1	284	18.4	1,904	134	43.1
Chi., St. P., Minneap. & Om.....1933	2,109	6,578	8,687	12.1	17,784	1,213	505	25.4	374	22.9	1,964	128	44.2
.....1932	2,153	7,222	9,375	9.9	16,578	1,091	424	23.4	305	20.2	1,666	131	42.3
Great Northern.....1933	43,262	11,558	54,820	5.7	27,137	1,812	766	26.1	295	17.2	1,922	134	35.6
.....1932	44,232	10,384	54,616	4.4	23,902	1,594	671	25.1	240	14.1	1,553	141	33.2
Minneap., St. P. & S. St. M.....1933	17,106	2,970	20,076	4.5	17,815	1,112	443	22.8	233	16.0	1,092	124	65.8
.....1932	20,680	2,584	23,264	3.9	16,281	1,029	424	23.0	205	13.5	1,102	125	57.4
Northern Pacific.....1933	41,238	4,576	45,814	11.6	25,785	1,723	726	25.3	281	16.8	2,010	160	38.9
.....1932	43,319												



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